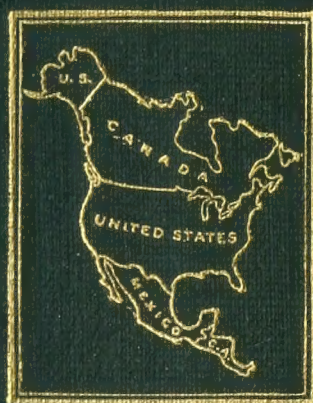


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REPORT
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INTERNATIONAL BOUNDARY COMMISSION
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REESTABLISHMENT OF THE BOUNDARY BETWEEN THE
UNITED STATES AND CANADA
FORTY-NINTH PARALLEL TO THE PACIFIC OCEAN

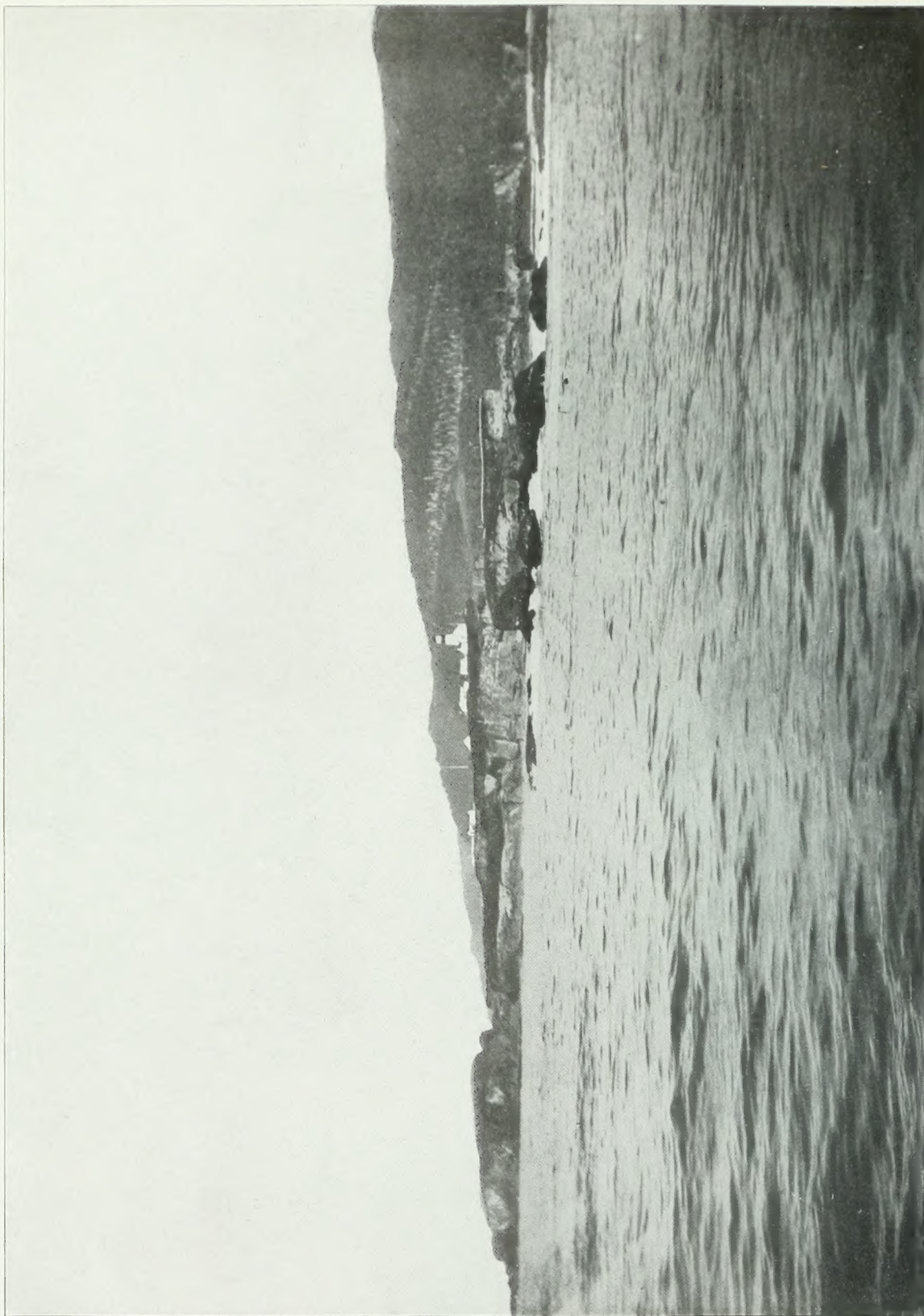


DEPARTMENT OF THE INTERIOR
1921



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CAPE FLATTERY—AT ENTRANCE TO JUAN DE FUCA STRAITS.

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INTERNATIONAL BOUNDARY COMMISSION

(U.S. and Canada), 1908 -

JOINT REPORT

UPON THE

SURVEY AND DEMARCATION OF THE BOUNDARY

BETWEEN THE

UNITED STATES AND CANADA

FROM THE WESTERN TERMINUS OF THE LAND
BOUNDARY ALONG THE FORTY-NINTH PARAL-
LEL, ON THE WEST SIDE OF POINT ROBERTS,
THROUGH GEORGIA, HARO, AND JUAN
DE FUCA STRAITS, TO THE PACIFIC OCEAN

IN ACCORDANCE WITH THE PROVISIONS OF
ARTICLE VIII OF THE TREATY SIGNED
AT WASHINGTON, APRIL 11, 1908

UNITED STATES COMMISSIONER

O. H. TITTMANN, 1908-1915
E. C. BARNARD, 1915-1921
E. LESTER JONES, 1921-

HIS BRITANNIC MAJESTY'S COMMISSIONER

W. F. KING, 1908-1916
J. J. McARTHUR, 1917-



WASHINGTON
GOVERNMENT PRINTING OFFICE
1921

165367
23/9/21

PUBLISHED UNDER THE AUTHORITY OF
THE INTERNATIONAL BOUNDARY
COMMISSIONERS

LETTER OF TRANSMITTAL.

OTTAWA, CANADA, *May 10, 1921.*

The Honourable The MINISTER OF THE INTERIOR:

SIR: I have the honour to submit herewith for transmission to His Majesty's Government, the printed joint report of the survey and demarcation of the International Boundary between the United States and Canada from the western terminus of the land boundary along the forty-ninth parallel, on the west side of Point Roberts, through Georgia, Haro, and Juan de Fuca Straits, to the Pacific Ocean, together with two identical signed joint charts, in accordance with the provisions of Article VIII of the Treaty signed at Washington, April 11, 1908.

The report contains:

Copy of the Treaty of 1908.

Copies of the appointments of the Commissioners under the Treaty of 1908.

Agreements of the Commissioners as to the manner in which the provisions of Article VIII of the Treaty of 1908 should be carried out.

Account of field operations under Article VIII of the Treaty of 1908 on the United States shore and on the Canadian shore.

Description of the Boundary Line, giving courses and distances, latitude and longitude of the initial point, turning points, and terminus of the Boundary Line, and bearings and distances from the boundary reference marks to the turning points and terminus, certified to by the Commissioners.

Table of geographic positions of initial point, turning points, and terminus of the Boundary Line.

List of boundary reference marks.

Table of geographic positions of boundary reference marks.

Description of field methods.

Appendices as follows:

I. Explorations of the Pacific coast region of North America between latitudes 42° N. and 56° N., prior to 1818.

II. Negotiations prior to the Treaty of 1908.

III. Copies of Articles of Treaties, Award, and Protocol pertaining to this section of the Boundary Line, prior to the Treaty of 1908.

IV. Geographic positions and descriptions of triangulation stations

The two identical original charts are certified and signed by the Commissioners who marked thereon the Boundary Line as reestablished in accordance with the provisions of Article VIII of the Treaty of 1908.

The field work, as well as some work on the final chart, was done and the office computations were made under the direction of the original Commissioners, Mr. O. H. Tittmann for the United States, who resigned April 15, 1915, and Dr. W. F. King for His Britannic Majesty, who died April 23, 1916.

The work on the final chart was completed under the direction of Mr. E. C. Barnard, who was appointed Commissioner for the United States April 30, 1915, and myself. The chart was signed by us in quadruplicate at Washington, May 13, 1919.

In the division of the work of preparing the reports of the survey and demarcation of the Boundary under the different articles of the Treaty of 1908, the report upon the section of the Boundary under Article VIII was undertaken by the United States Commissioner, Mr. E. C. Barnard, and was in the hands of the printer when Mr. Barnard became seriously ill in December, 1920, and died February 6, 1921, before the printed copies were ready for the Commissioners' signatures.

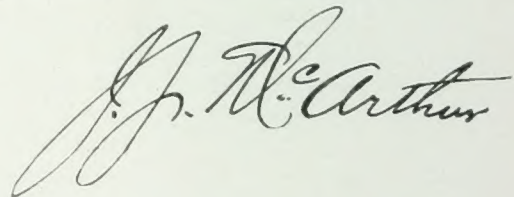
Mr. E. Lester Jones was appointed Commissioner for the United States February 28, 1921.

The work under Article VIII of the Treaty of 1908 has been completed by the signing of this joint report by the United States Commissioner, Mr. E. Lester Jones, and myself.

The report and signed joint charts transmitted herewith are identical with those transmitted by my colleague to his Government, the report having been printed from the same plates and the signed original charts, as well as the copies thereof, for both countries, having been printed from the same stone.

It is most gratifying to record that the location of the Boundary Line and the preparation of the chart and report have been accomplished in a spirit of hearty cooperation, and to state that the cordial relations which so long existed between the former Commissioners have been continued by their successors.

I have the honour to be, sir, very respectfully, your obedient servant,

A handwritten signature in dark ink, appearing to read "J. P. McArthur". The signature is fluid and cursive, with a large initial "J" and a long, sweeping underline.

His Britannic Majesty's Commissioner.

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Joint Chart of the International Boundary between the United States and Canada from the Forty-ninth Parallel to the Pacific Ocean in pocket at back of each copy of the Report prepared for distribution.

INTRODUCTION.

The Boundary Line through the Straits of Georgia, Haro, and Juan de Fuca, as surveyed and marked by the present Boundary Commission, is a reestablishment of the Boundary as originally defined in Article I of the Treaty of June 15, 1846, between the United States and Great Britain, and as determined by the Award made on October 21, 1872, by the Emperor of Germany as arbiter pursuant to the provisions of Articles XXXIV to XLII of the Treaty of May 8, 1871, between the United States and Great Britain, and as traced out and marked on a quadruplicate set of charts prepared for that purpose, and agreed upon and signed by the duly authorized representatives of the respective Governments in a Protocol of a Conference at Washington on March 10, 1873, and as defined by them in a written definition of said Boundary, signed by them and referred to in and attached to said Protocol.

Article VIII of the Treaty of 1908 provides that Commissioners be appointed for the purpose of delineating this Boundary upon accurate modern charts, and it directs the Commissioners to adopt, in place of the curved line passing between Saturna Island and Patos Island as shown on the original charts, a straight line running approximately North and South through a point midway between the eastern point of Saturna Island and the western point of Patos Island and intersecting the prolongations of the two straight lines of the Boundary joined by the curved line, and it authorizes the Commissioners to select and establish such reference marks on shore as they may deem necessary for the proper definition of the Boundary on the water.

In accordance with the above provisions, the line as now reestablished consists of twelve straight line courses, the ends of which are fixed by reference marks on the shore. It has a total length of 150 statute ($130\frac{1}{4}$ nautical) miles. Beginning at the western terminus of the land boundary along the forty-ninth parallel on the west side of Point Roberts (a peninsula extending south from the mouth of the Fraser River, B. C.), the line runs westward to the middle of Georgia Strait; thence southwestward through Georgia Strait to a point off Saturna Island; thence southward between Saturna and Patos Island, through Haro Strait, to Middle Bank Shoal; thence southwestward, then northwestward through Juan de Fuca Strait to the terminus at the Pacific Ocean.

The work of the Commission, as set forth in this report, consisted of selecting available lighthouses which would be suitable for Boundary reference marks;

selecting sites for and erecting concrete monuments as additional reference marks on the shore at governing points of the course of the Boundary Line as described in the Treaty; determining the geodetic positions of these marks by connecting the marks to existent triangulation; making topographic maps of the vicinities of the lighthouses and the monuments; plotting the positions of the reference marks on a base map (United States Coast and Geodetic Survey Chart No. 6300, which embodies the British Admiralty Chart on which the Boundary Line was drawn under the Protocol of the Conference at Washington on May 10, 1873, and which shows the shore line with sufficient accuracy for the purpose); drawing thereon the Boundary Line in conformity with its definition set forth in the Treaty; preparing the report required by the Treaty; and transmitting to the Governments of the United States and Great Britain duplicate signed copies of the report and chart.

TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE
UNITED KINGDOM CONCERNING THE BOUNDARY BETWEEN
THE UNITED STATES AND THE DOMINION OF CANADA FROM
THE ATLANTIC OCEAN TO THE PACIFIC OCEAN.

SIGNED AT WASHINGTON, APRIL 11, 1908.

(Ratifications exchanged at Washington, June 4, 1908.)

The United States of America and His Majesty Edward the Seventh, of the United Kingdom of Great Britain and Ireland, and of the British Dominions beyond the Seas, King, and Emperor of India, being desirous of providing for the more complete definition and demarcation of the international boundary between the United States and the Dominion of Canada, have for that purpose resolved to conclude a treaty, and to that end have appointed as their Plenipotentiaries:

The President of the United States of America, Elihu Root, Secretary of State of the United States; and

His Britannic Majesty, Right Honorable James Bryce, O. M., his Ambassador Extraordinary and Plenipotentiary at Washington;

Who, after having communicated to each other their respective full powers, which were found to be in due and proper form, have agreed to and concluded the following articles:

ARTICLE I.

THE BOUNDARY THROUGH PASSAMAQUODDY BAY.

The High Contracting Parties agree that each shall appoint, without delay, an expert geographer or surveyor to serve as Commissioners for the purpose of more accurately defining and marking the international boundary line between the United States and the Dominion of Canada in the waters of Passamaquoddy Bay from the mouth of the St. Croix River to the Bay of Fundy, and that in defining and marking said boundary line the Commissioners shall adopt and follow, as closely as may be, the line surveyed and laid down by the Commissioners appointed under Article II of the Treaty of July 22, 1892, between the United States and Great Britain, so far as said Commissioners agreed upon the location of said line, namely:

(1) From a point at the mouth of the St. Croix River defined by the ranges established by them, by a connected series of six straight lines defined by ranges and cross ranges, to a point between Treat Island and Friar Head, likewise defined by ranges and cross ranges established by them; and also

2) From a point in Quoddy Roads, defined by the intersection of the range passing through the position of the Beacon of 1886 and Lubec Channel Light, with a range established by them on the west shore of Quoddy Roads along the course of this latter range, which is about $80^{\circ} 35'$ east of true south, into the Bay of Fundy.

In ascertaining the location of the above-described line, the Commissioners shall be controlled by the indications of the range marks and monuments established along its course by said former Commissioners and by the charts upon which the said Commissioners marked the line as tentatively agreed upon by them.

The remaining portion of the line, lying between the two above-described sections, and upon the location of which said former Commissioners did not agree, shall pass through the center of the Lubec Narrows Channel between Campo Bello Island and the mainland, and, subject to the provisions hereinafter stated, it shall follow on either side of the said Narrows such courses as will connect with the parts of the line agreed upon as aforesaid, and such boundary shall consist of a series of straight lines defined by distances and courses; but inasmuch as differences have arisen in the past as to the location of the line with respect to Pope's Folly Island above Lubec Narrows and with respect to certain fishing grounds east of the dredged channel below Lubec Narrows, it is agreed that each of the High Contracting Parties shall present to the other within six months after the ratification of this Treaty a full printed statement of the evidence, with certified copies of original documents referred to therein which are in its possession, and the arguments upon which it bases its contentions, with a view to arriving at an adjustment of the location of this portion of the line in accordance with the true intent and meaning of the provisions relating thereto of the treaties of 1783 and 1814 between the United States and Great Britain, and the award of the Commissioners appointed in that behalf under the treaty of 1814; it being understood that any action by either or both Governments or their representatives authorized in that behalf or by the local governments on either side of the line, whether prior or subsequent to such treaties and award, tending to aid in the interpretation thereof, shall be taken into consideration in determining their true intent and meaning. Such agreement, if reached, shall be reduced to writing in the form of a protocol and shall be communicated to the said Commissioners, who shall lay down and mark this portion of the boundary in accordance therewith and as herein provided.

In the event of a failure to agree within six months after the date of exchanging the printed statements aforesaid, the question of which Government is entitled to jurisdiction over such island and fishing grounds under treaty provisions, and proceedings thereunder, interpreted in accordance with their true intent and meaning as above provided, and by reason of any rights arising under the recognized principles of international law, shall be referred forthwith for decision upon the evidence and arguments submitted as aforesaid, with such additional statement of facts as may be appropriate, and an argument in reply on each side, to an arbitrator

to be agreed upon by the two Governments, or, in case of a failure to agree, to be appointed by a third Power selected by the two Governments by common accord, or, if no agreement is thus arrived at, each Government shall select a different Power and the choice of the arbitrator shall be made in concert by the Powers thus selected. The decision of such arbitrator shall be final, and the line shall be laid down and marked by the said Commissioners in accordance therewith and as herein provided.

The arbitrator shall be requested to deliver, together with his award, a statement of all the costs and expenses incurred by him in connection with the arbitration, which shall forthwith be repaid by the two Governments in equal moieties.

It is further agreed that if, under the foregoing provisions, the boundary be located through the channel to the east of the dredged channel above mentioned, the latter shall be equally free and open for the passage of ships, vessels, and boats of both parties.

The entire boundary shall be marked by permanent range marks established on land and, if desirable in the opinion of Commissioners, by buoys in the water, so far as practicable, and by such other boundary marks and monuments and at such points as the Commissioners may determine to be necessary; but the said Commissioners shall proceed to define and mark and chart the portion of the line agreed upon by the former Commissioners under the Treaty of 1892 aforesaid without waiting for the final determination of the location of the remaining portion of the line.

The course of the said boundary line as defined and marked as aforesaid shall be laid down by said Commissioners on quadruplicate sets of accurate modern charts prepared or adopted by them for that purpose, which charts shall be certified and signed by the Commissioners, and two duplicate originals thereof shall be filed by them with each Government; and they shall also prepare in duplicate and file with each Government a joint report or reports under their hands and seals describing in detail the course and location of the boundary line and the range marks and monuments and buoys marking it.

The line so defined and laid down shall be taken and deemed to be the international boundary from the Bay of Fundy to the mouth of the St. Croix River, as established by treaty provisions and the proceedings thereunder.

ARTICLE II.

THE BOUNDARY FROM THE MOUTH TO THE SOURCE OF THE ST. CROIX RIVER.

Whereas Article II of the Treaty of 1783 between the United States and Great Britain provides that a line drawn along the middle of the River St. Croix from its mouth in the Bay of Fundy to its source shall be, between those points, the international boundary between the United States and the British possessions in North

America, and the identity of the River St. Croix has been determined by the Commissioners appointed for that purpose under Article V of the Treaty of 1794 between the United States and Great Britain, and the location of the mouth and the source of said river has been duly established, and the course of said river has been described, surveyed, and charted by said Commissioners, as appears from their joint report dated the 25th day of October, 1798, and from the chart or plan of said river prepared and filed by them with said report, but said line of boundary along the middle of said river was not laid down by them on said chart or plan, and was not marked or monumented by them along the course of said river; and whereas, pursuant to an additional article, dated March 15, 1798, supplementing the provisions of the Treaty of 1794 above referred to, a monument was erected by joint action of the two Governments marking the source of the River St. Croix, but said line of boundary through the River St. Croix has not otherwise been monumented and has never been laid down on charts by joint action of the two Governments: therefore, in order to complete and render thoroughly effective the demarkation of the boundary described and established as aforesaid,

It is agreed that each of the High Contracting Parties shall appoint, without delay, an expert geographer or surveyor as a Commissioner, and the Commissioners so appointed shall jointly lay down upon accurate modern charts, to be prepared or adopted by them for that purpose, the line of boundary along the middle of the River St. Croix from its mouth to its source as defined and established by the existing treaty provisions and the proceedings thereunder, above referred to, with the agreed understanding, however, that the line of boundary through said river shall be a water line throughout and shall follow the center of the main channel or thalweg as naturally existing, except where such course would change, or disturb, or conflict with the national character of an island as already established by mutual recognition and acquiescence, in which case the line shall pass on the other side of any such island, following the middle of the channel nearest thereto, or, if the Commissioners find that the national character of any island is in dispute, the question of its nationality shall be submitted by them to their respective Governments, with a chart or map certified jointly by said Commissioners, showing the depth and volume of the water at its high and low stages between such island and the river banks on each side and indicating the course of the main channel of the river as it passes such island, together with a descriptive statement by said Commissioners showing the reasons for selecting such channel as the main channel; and in all such cases the High Contracting Parties agree that the location of the boundary with respect to each island in dispute shall be determined and settled in accordance with the following rules:

(1) The nationality of each island in dispute shall be determined by the predominance of the claims established on either side to such island, arising from the exercise of jurisdiction and sovereignty over it, including such exercise of jurisdiction by the local governments on either side of the line.

(2) The burden of proving the nationality of any such island shall be upon the party seeking to change the general course of the boundary as above prescribed so as to include such island on its own side of the boundary.

(3) The selection by the Commissioners of the main channel passing such island shall not be conclusive upon the parties hereto and is subject to review, but the burden of proving the main channel to be other than the one selected shall be upon the party proposing the change.

The Government proposing such change in the prescribed course of the boundary shall, upon the submission of the question of the nationality of any island or islands by the Commissioners as aforesaid, promptly present to the other Government a printed statement, with certified copies of any original documents in its possession referred to therein, showing the grounds and arguments upon which its claim of jurisdiction and ownership with respect to such island rests. Unless an agreement is reached upon the presentation of such statement, the Government to which such statement is presented shall within six months after its receipt present in reply a similar statement showing the grounds and arguments upon which the claims of the other Government are contested. If an agreement is reached between the two Governments, it shall be reduced to writing in the form of a protocol and shall be communicated to the said Commissioners, who shall proceed to lay down and mark the boundary so as to leave such island on the side of the boundary to which it is shown it belongs, in accordance with the determination of its nationality arrived at as aforesaid.

In the event of a failure by the two Governments to come to an agreement within six months after the presentation of the printed statements in reply herein above provided for, then the question of the nationality of the islands in dispute shall be referred forthwith for decision under the rules herein above set forth for the determination of that question, and under the recognized principles of international law not inconsistent therewith, and upon the evidence and arguments submitted as aforesaid, with such additional statement of facts as may be appropriate, and such further printed argument on each side as may be desired, to an arbitrator to be agreed upon by the two Governments, or, in case of a failure to agree, to be appointed by a third Power selected by the two Governments by common accord, or, if no agreement is thus arrived at, each Government shall select a different Power and the choice of the arbitrator shall be made in concert by the Powers thus selected. The decision of such arbitrator shall be final, and the line shall be laid down and marked by the said Commissioners in accordance therewith and as herein provided.

The arbitrator shall be requested to deliver, together with his award, a statement of all the costs and expenses incurred by him in connection with the arbitration, which shall forthwith be repaid by the two Governments in equal moieties.

It is further agreed that so far as practicable the said Commissioners shall establish boundary monuments and ranges and buoys marking the course and location of the said line, and showing on which side of the boundary the several

islands lying in said river belong, wherever in their judgment it is desirable that the boundary be so marked.

The charts upon which the boundary is marked as aforesaid shall be in quadruplicate, and shall be certified and signed by said Commissioners, and two duplicate originals thereof shall be filed by them with each Government, and it shall also be the duty of said Commissioners to prepare in duplicate, and file with each Government, a joint report under their hands and seals describing the line so marked by them and the monuments and range marks and buoys marking it.

The line so defined and laid down shall be taken and deemed to be the international boundary from the mouth to the source of the St. Croix River as established by treaty provisions and the proceedings thereunder as aforesaid.

ARTICLE III.

THE BOUNDARY FROM THE SOURCE OF THE ST. CROIX RIVER TO THE ST. LAWRENCE RIVER.

Whereas the remonumenting of the course of the boundary defined and laid down under the provisions of Articles I and VI of the Treaty of August 9, 1842, between the United States and Great Britain has already been undertaken without a formal treaty agreement, but by the joint and concurrent action of the Governments of the United States and Great Britain, certain monuments between Vermont and Canada having been relocated in 1849, and the portion of said boundary extending between Hall's Stream and the St. Lawrence River in part having been remonumented in recent years and in part is now being remonumented under such action on both sides; and whereas the Commissioners appointed under Article VI of the Treaty of 1842 aforesaid were required to and did mark by monuments the land portion only of said line, and were not required to and did not mark by monuments the portions of the boundary extending along water courses, with the exception that the nationality of the several islands in the St. John River was indicated by monuments erected thereon and a series of monuments was placed by them along the edge of certain of the water courses to fix the general direction of the boundary, most of which monuments have since disappeared, but the entire boundary, including its course through the waterways as well as on land, was charted and marked on maps by said Commissioners under the provisions of Article VI above referred to, and the nationality of the respective islands in the St. John River was determined by them, as appears from the joint report filed by said Commissioners dated June 28, 1847, and the series of maps signed by said Commissioners and filed with their joint report; and whereas the portion of the line through said waterways has not since been monumented or marked along its course by joint action of the two Governments, and the monuments placed by said Commissioners along the land portion of said boundary require repairing and renewing

where such work has not already been done in recent years, and additional or supplementary intermediate monuments at convenient points are required under modern conditions: therefore, in order to carry on and complete the work already undertaken as aforesaid, and to reestablish the location of said boundary and render thoroughly effective the demarcation of the said boundary as existent and established,

It is agreed that each of the High Contracting Parties shall appoint, without delay, an expert geographer or surveyor as a Commissioner, and under the joint direction of such Commissioners the lost or damaged boundary monuments shall be relocated and repaired, and additional monuments and boundary marks shall be established wherever necessary in the judgment of the Commissioners to meet the requirements of modern conditions along the course of the land portion of said boundary, and where the said boundary runs through waterways it shall be marked along its course, so far as practicable, by buoys and monuments in the water and by permanent ranges established on the land, and in such other way and at such points as in the judgment of the Commissioners it is desirable that the boundary be so marked; and it is further agreed that the course of the entire boundary, as described in Article I of the Treaty of 1842 and as laid down as aforesaid under Article VI of that Treaty, shall be marked by said Commissioners upon quadruplicate sets of accurate modern charts prepared or adopted by them for that purpose, and that said charts so marked shall be certified and signed by them and two duplicate originals thereof shall be filed with each Government, and said Commissioners shall also prepare in duplicate and file with each Government a joint report or reports describing in detail the course of the boundary so marked by them, and the character and location of the several monuments and boundary marks and ranges marking it.

The line so defined and laid down shall be taken and deemed to be the international boundary as defined and laid down under Articles I and VI of the said Treaty of 1842.

ARTICLE IV.

THE BOUNDARY FROM ITS INTERSECTION WITH THE ST. LAWRENCE RIVER TO THE MOUTH OF PIGEON RIVER.

The High Contracting Parties agree that the existing International Waterways Commission, constituted by concurrent action of the United States and the Dominion of Canada and composed of three Commissioners on the part of the United States and three Commissioners on the part of the Dominion of Canada, is hereby authorized and empowered to ascertain and reestablish accurately the location of the international boundary line beginning at the point of its intersection with the St. Lawrence River near the forty-fifth parallel of north latitude, as determined under Articles I and VI of the Treaty of August 9, 1842, between the

United States and Great Britain, and thence through the Great Lakes and communicating waterways to the mouth of Pigeon River, at the western shore of Lake Superior, in accordance with the description of such line in Article II of the Treaty of Peace between the United States and Great Britain, dated September 3, 1783, and of a portion of such line in Article II of the Treaty of August 9, 1842, aforesaid, and as described in the joint report dated June 18, 1822, of the Commissioners appointed under Article VI of the Treaty of December 24, 1814, between the United States and Great Britain, with respect to a portion of said line and as marked on charts prepared by them and filed with said report, and with respect to the remaining portion of said line as marked on the charts adopted as treaty charts of the boundary under the provisions of Article II of the Treaty of 1842, above mentioned, with such deviation from said line, however, as may be required on account of the cession by Great Britain to the United States of the portion of Horse Shoe Reef in the Niagara River necessary for the light-house erected there by the United States in accordance with the terms of the protocol of a conference held at the British Foreign Office December 9, 1850, between the representatives of the two Governments and signed by them agreeing upon such cession; and it is agreed that wherever the boundary is shown on said charts by a curved line along the water the Commissioners are authorized in their discretion to adopt, in place of such curved line, a series of connecting straight lines defined by distances and courses and following generally the course of such curved line, but conforming strictly to the description of the boundary in the existing treaty provisions, and the geographical coordinates of the turning points of such line shall be stated by said Commissioners so as to conform to the system of latitudes and longitudes of the charts mentioned below, and the said Commissioners shall so far as practicable mark the course of the entire boundary line located and defined as aforesaid, by buoys and monuments in the waterways and by permanent range marks established on the adjacent shores or islands, and by such other boundary marks and at such points as in the judgment of the Commissioners it is desirable that the boundary should be so marked; and the line of the boundary defined and located as aforesaid shall be laid down by said Commissioners on accurate modern charts prepared or adopted by them for that purpose, in quadruplicate sets, certified and signed by the Commissioners, two duplicate originals of which shall be filed by them with each Government; and the Commissioners shall also prepare in duplicate and file with each Government a joint report or reports describing in detail the course of said line and the range marks and buoys marking it, and the character and location of each boundary mark. The majority of the Commissioners shall have power to render a decision.

The line so defined and laid down shall be taken and deemed to be the international boundary as defined and established by treaty provisions and the proceedings thereunder as aforesaid from its intersection with the St. Lawrence River to the mouth of Pigeon River.

ARTICLE V.

THE BOUNDARY FROM THE MOUTH OF PIGEON RIVER TO THE NORTHWESTERMOST POINT OF THE LAKE OF THE WOODS.

In order to complete and perfect the demarcation of the international boundary line between the United States and the Dominion of Canada from the mouth of Pigeon River, at the western shore of Lake Superior, to the northwesternmost point of the Lake of the Woods, which boundary is defined in Article II of the Treaty of Peace between the United States and Great Britain dated September 3, 1783, and in Article II of the Treaty of August 9, 1842, between the United States and Great Britain, wherein is defined also the location of the said northwesternmost point of the Lake of the Woods, and the greater part of the said boundary is marked on charts covering that section of the boundary adopted as treaty charts of the boundary under the provisions of Article II of the Treaty of 1842 aforesaid, but has never been actually located or monumented along its course by joint action of the two Governments, and no joint survey of its course has been made since the survey under the direction of the Commissioners appointed under Article VII of the Treaty of December 24, 1814, between the United States and Great Britain, under whose direction the charts above mentioned were prepared,

It is agreed that each of the High Contracting Parties shall appoint, without delay, an expert geographer or surveyor as Commissioners, who shall reestablish and fix the actual location of said entire boundary described and charted as aforesaid, and designate the side of the boundary upon which each island adjacent to the boundary belongs, it being mutually understood that the boundary, so far as practicable, shall be a water line and shall not intersect islands lying along its course, and the Commissioners shall so far as practicable mark such boundary along its course by monuments and buoys and range marks, and such other boundary marks as the Commissioners may determine, and at such points as in their judgment it is desirable that the boundary shall be so marked; and it is further agreed that the course of the entire boundary as described and laid down as aforesaid and as monumented by said Commissioners shall be marked by them upon quadruplicate sets of accurate modern charts prepared or adopted by them for that purpose, and that said charts so marked shall be certified and signed by them and two duplicate originals thereof shall be filed with each Government, and said Commissioners shall also prepare in duplicate and file with each Government a joint report or reports describing in detail the course of the boundary so marked by them and the character and location of the several monuments and boundary marks and ranges marking it.

The line so defined and laid down shall be taken and deemed to be the international boundary as defined and established under the aforesaid treaties from the mouth of Pigeon River to the northwesternmost point of the Lake of the Woods

ARTICLE VI.

THE BOUNDARY FROM THE NORTHWESTERNMOST POINT OF THE LAKE OF THE WOODS
TO THE SUMMIT OF THE ROCKY MOUNTAINS.

In order to complete and render thoroughly effective the demarcation of the international boundary between the United States and the Dominion of Canada from the northwesternmost point of the Lake of the Woods to the summit of the Rocky Mountains, which boundary, according to existing treaties, runs due south from said northwesternmost point to the forty-ninth parallel of north latitude and thence along that parallel to the summit of the Rocky Mountains, and has been surveyed and charted and monumented as appears from the series of twenty-four sectional maps covering this portion of the boundary prepared and filed by the Joint Commission appointed for that purpose by joint action of the two Governments in 1872,

It is agreed that each of the High Contracting Parties shall appoint, without delay, an expert geographer or surveyor as a Commissioner, and under the joint direction of such Commissioners lost or damaged monuments along the course of said boundary shall be relocated and repaired and additional monuments and boundary marks shall be established wherever necessary, in the judgment of the Commissioners, to meet the requirements of modern conditions and to render more effective the demarcation of the existent boundary established under the treaty provisions and proceedings thereunder as aforesaid; and it is further agreed that in carrying out these provisions the said Commissioners shall observe the agreement stated in the protocol of the final meeting, dated May 29, 1876, of the Joint Commission aforesaid, which is as follows:

"2. In the intervals between the monuments along the parallel of latitude, it is agreed that the line has the curvature of a parallel of 49° north latitude; and that such characteristic shall determine all questions that may hereafter arise with reference to the position of the boundary at any point between neighboring monuments.

"3. It is further agreed that, in the event of any of the said three hundred and eighty-eight monuments or marks being obliterated beyond the power of recognition, the lost site or sites shall be recovered by their recorded position relatively to the next neighboring unobliterated mark or marks."

It is further agreed that the said Commissioners shall mark upon quadruplicate sets of accurate modern charts prepared or adopted by them for that purpose the entire course of said boundary and the location of the boundary monuments and marks established along the course of said boundary, and two duplicate originals thereof shall be filed with each Government, and said Commissioners shall also prepare in duplicate and file with each Government a joint report describing in detail the work done by them in replacing and repairing lost or damaged monuments and the character and location of the several monuments and boundary marks placed by them along said boundary.

The line so laid down and defined shall be taken and deemed to be the international boundary as defined and established by treaty provisions and the proceedings thereunder as aforesaid from the northwesternmost point of the Lake of the Woods to the summit of the Rocky Mountains.

ARTICLE VII.

THE BOUNDARY FROM THE SUMMIT OF THE ROCKY MOUNTAINS TO THE GULF OF GEORGIA.

Whereas, by concurrent action of the Government of the United States and the Government of Great Britain in 1902 and 1903, Commissioners were designated to act jointly for the purpose of renewing lost or damaged monuments and placing additional monuments where such were needed throughout the course of the boundary along the forty-ninth parallel of north latitude, from the summit of the Rocky Mountains westward to the eastern shore of the Gulf of Georgia, as defined in Article I of the Treaty of June 15, 1846, between the United States and Great Britain and as marked by monuments along its course and laid down on a series of charts, seven in number, by a Joint Commission organized in 1858 for that purpose and composed of two Commissioners appointed one by each Government, which charts, duly certified and authenticated in duplicate by said Commissioners, were approved and adopted by the two Governments, as appears from the declaration in writing to that effect signed on February 24, 1870, at Washington by duly authorized Plenipotentiaries of the respective Governments, and it appearing that the remonumenting of this line by the Commissioners first above referred to is now approaching completion;

It is hereby agreed by the High Contracting Parties that when such work is completed the entire course of said boundary, showing the location of the boundary monuments and marks established along the course of the boundary, shall be marked upon quadruplicate sets of accurate modern charts prepared or adopted for that purpose, and the said Commissioners, or their successors, are hereby authorized and required to so mark the line and designate the monuments on such charts, two duplicate originals of which shall be filed with each Government, and the said Commissioners, or their successors, shall also prepare in duplicate and file with each Government a joint report describing in detail the work done by them in replacing and repairing lost or damaged monuments and the character and location of the several monuments and boundary marks placed by them along said boundary.

The line so laid down and defined shall be taken and deemed to be the international boundary as defined and established by treaty provisions and the proceedings thereunder as aforesaid, from the summit of the Rocky Mountains to the eastern shore of the Gulf of Georgia.

ARTICLE VIII.

THE BOUNDARY FROM THE FORTY-NINTH PARALLEL TO THE PACIFIC OCEAN

The High Contracting Parties agree that each shall appoint, without delay, an expert geographer or surveyor to serve as Commissioners for the purpose of delineating upon accurate modern charts, prepared or adopted by them for that purpose, the international boundary line between the United States and the Dominion of Canada from the forty-ninth parallel of north latitude along the middle of the channel which separates Vancouver's Island from the mainland and the middle of the Haro Channel and of Fuca's Straits to the Pacific Ocean, as defined in Article I of the Treaty of June 15, 1846, between the United States and Great Britain, and as determined by the award made on October 21, 1872, by the Emperor of Germany as arbitrator pursuant to the provisions of Articles XXXIV–XLII of the Treaty of May 8, 1871, between the United States and Great Britain, and as traced out and marked on a quadruplicate set of charts prepared for that purpose and agreed upon and signed by the duly authorized representatives of the respective Governments, as appears from the protocol of a conference at Washington on March 10, 1873, between such representatives which was signed by them on that date, and as defined by them in a written definition of said boundary signed by them and referred to in and attached to said protocol, and it is agreed that the said Commissioners shall adopt in place of the curved line passing between Saturna Island and Patos Island as shown on said charts a straight line running approximately north and south through a point midway between the eastern point of Saturna Island and the western point of Patos Island and intersecting the prolongations of the two straight lines of the boundary now joined by a curved line. The entire line thus laid down shall consist of a series of connecting straight lines defined by distances and courses; and the Commissioners are authorized to select and establish such reference marks on shore as they may deem necessary for the proper definition and location on the water of the boundary aforesaid. A quadruplicate set of such charts, showing the lines so laid down and marked by them and the location of the several marks or monuments selected or established by them along its course, shall be signed by them and two duplicate originals thereof shall be filed by them with each Government, and the Commissioners shall also prepare in duplicate and file with each Government a joint report, or reports, describing in detail the course of said line and the boundary marks and their location along its course.

The line so defined and laid down shall be taken and deemed to be the international boundary, as defined and established by treaty provisions and the proceedings thereunder as aforesaid, from the forty-ninth parallel of north latitude along the middle of the channel which separates Vancouver's Island from the mainland and the middle of Haro Channel and of Fuca's Straits to the Pacific Ocean.

ARTICLE IX.

GENERAL PROVISIONS.

The Commissioners appointed under the provisions of this Treaty shall proceed without delay to perform the duties assigned to them, but each Commissioner shall, before entering upon his duties, make oath in writing that he will impartially and faithfully perform his duties as such Commissioner.

In case a vacancy occurs in any of the Commissions constituted by this Treaty, by reason of the death, resignation, or other disability of a Commissioner, before the work of such Commission is completed, the vacancy so caused shall be filled forthwith by the appointment of another Commissioner by the party on whose side the vacancy occurs, and the Commissioner so appointed shall have the same powers and be subject to the same duties and obligations as the Commissioner originally appointed.

If a dispute or difference should arise about the location or demarcation of any portion of the boundary covered by the provisions of this Treaty and an agreement with respect thereto is not reached by the Commissioners charged herein with locating and marking such portion of the line, they shall make a report in writing jointly to both Governments, or severally each to his own Government, setting out fully the questions in dispute and the differences between them, but such Commissioners shall, nevertheless, proceed to carry on and complete as far as possible the work herein assigned to them with respect to the remaining portions of the line.

In case of such a disagreement between the Commissioners, the two Governments shall endeavor to agree upon an adjustment of the questions in dispute, and if an agreement is reached between the two Governments it shall be reduced to writing in the form of a protocol, and shall be communicated to the said Commissioners, who shall proceed to lay down and mark the boundary in accordance therewith, and as herein provided, but without prejudice to the special provisions contained in Articles I and II regarding arbitration.

It is understood that under the foregoing articles the same persons will be appointed to carry out the delimitation of boundaries in the several sections aforesaid, other than the section covered by Article IV, unless either of the Contracting Powers finds it expedient for some reason which it may think sufficient to appoint some other person to be Commissioner for any one of the above-mentioned sections.

Each Government shall pay the expenses of its own Commissioners and their assistants, and the cost of marking and monumenting the boundary shall be paid in equal moieties by the two Governments.

ARTICLE X.

This Treaty shall be ratified by the President of the United States, by and with the advice and consent of the Senate thereof, and by His Britannic Majesty; and the ratifications shall be exchanged in Washington as soon as practicable.

In faith whereof the respective Plenipotentiaries have signed this Treaty in duplicate and have hereunto affixed their seals.

Done at Washington the 11th day of April in the year of our Lord one thousand nine hundred and eight.

ELIHU ROOT [SEAL.]

JAMES BRYCE [SEAL.]

APPOINTMENTS OF COMMISSIONERS.

MR. O. H. TITTMANN FOR THE UNITED STATES.

THEODORE ROOSEVELT,

PRESIDENT OF THE UNITED STATES OF AMERICA.

To all to whom these Presents shall come, Greeting:

Know ye, that reposing special trust and confidence in the integrity and ability of Otto H. Tittmann, of Missouri, Superintendent of the United States Coast and Geodetic Survey, I do appoint him the expert Commissioner on the part of the United States for the purpose of more accurately defining and marking the international boundary line between the United States and the Dominion of Canada, under the provisions of Articles I, II, III, V, VI, VII, and VIII of the treaty between the United States and Great Britain, signed at Washington on April 11, 1908, and do authorize and empower him to execute and fulfill the duties of this commission with all the powers, privileges, and emoluments thereunto of right appertaining, during the pleasure of the President of the United States.

In testimony whereof, I have caused the Seal of the United States to be hereunto affixed.

Given under my hand at the City of Washington this fifth day of June,
in the year of our Lord one thousand nine hundred and eight, and of
the Independence of the United States of America the one hundred
and thirty-second.

[SEAL OF THE UNITED STATES OF AMERICA.]

THEODORE ROOSEVELT.

By the President:

ELIHU ROOT, *Secretary of State.*

AMERICAN EMBASSY, *London, June 24, 1908.*

SIR: I have the honour to inform you that Mr. Otto H. Tittmann, Superintendent of the United States Coast and Geodetic Survey, has been appointed the expert Commissioner on the part of the United States for the delimitation of the boundary line between the United States and Canada, under Articles I, II, III, V, VI, VII, and VIII of the Treaty of April 11th, 1908, between Great Britain and the United States.

I have, etc.,

WHITELAW REID.

Sir EDWARD GREY, Bart.

DR. W. F. KING FOR HIS BRITANNIC MAJESTY.

P. C. 2303 M.

DOWNING STREET, *15th July, 1908.*

MY LORD: I have the honour to transmit to you for the information of your Ministers, with reference to my telegram of the 13th of July, the papers noted in the subjoined schedule, on the subject of the appointment of Mr. W. F. King as British Commissioner under the Boundary Delimitation Treaty with the United States.

I have, etc.,

CREWE.

THE OFFICER ADMINISTERING THE GOVERNMENT OF CANADA.
13th July, Foreign Office.

FOREIGN OFFICE, *13th July, 1908.*

SIR: In reply to your letter of the 11th instant, I am directed by Secretary Sir E. Grey to state that he concurs in the appointment of Mr. W. F. King as British Commissioner, under the Treaty of April 11th last with the United States Government for the delimitation of all the Sections of the Boundary between the United States and Canada mentioned in the above treaty, except the fourth, which includes the line through the St. Lawrence River and the Great Lakes.

His Majesty's Charge d'Affaires at Washington has been instructed by telegraph (copy enclosed) to inform the United States Government of Mr. King's appointment.

I am, etc.,

F. A. CAMPBELL.

THE UNDER SECRETARY OF STATE, *Colonial Office.*

TELEGRAM TO MR. HOWARD, WASHINGTON, FROM FOREIGN OFFICE, NO. 87, DATED
JULY 11, 1908.

"Your despatch No. 213. (June 17th. Boundary Delimitation Treaty.)

"Inform United States Government that Mr. William Frederick King, C. M. G., Dominion Topographical Surveyor and Chief Astronomer of the Dominion, Department of the Interior, has been appointed British Commissioner for all sections of the boundary except the fourth, which includes the St. Lawrence River and Great Lakes."

P. C. 2288-M.

*From Charge d'Affaires to U. S. To Lord Grey.*BRITISH EMBASSY, *Manchester, Mass., 13th July, 1908.*

MY LORD: I have the honour to inform your Excellency that upon receipt of telegraphic instructions to that effect from His Majesty's Principal Secretary of State for Foreign Affairs, I have communicated to the United States Government the appointment of Dr. William Frederick King, C. M. G., British Commissioner for the delimitation of such sections of the Boundary between Canada and the United States as are not otherwise provided for in the Treaty recently signed.

I have, etc.,

ESME HOWARD.

MR. E. C. BARNARD FOR THE UNITED STATES.

WOODROW WILSON,

PRESIDENT OF THE UNITED STATES OF AMERICA.

To all to whom these Presents shall come, Greeting:

Know Ye, that reposing special trust and confidence in the integrity and ability of Edward C. Barnard, of New York, I do appoint him the expert Commissioner on the part of the United States for the purpose of more accurately defining and marking the international boundary line between the United States and the Dominion of Canada, under the provisions of Articles I, II, III, V, VI, VII and VIII of the treaty between the United States and Great Britain, signed at Washington on April 11, 1908, and do authorize and empower him to execute and fulfill the duties of this commission with all the powers, privileges and emoluments thereunto of right appertaining, during the pleasure of the President of the United States.

In testimony whereof, I have caused the Seal of the United States to be hereunto affixed.

Given under my hand at the City of Washington this thirtieth day of April, in the year of our Lord one thousand nine hundred and fifteen, and of the Independence of the United States of America the one hundred and thirty-ninth.

[SEAL]

WOODROW WILSON.

By the President,

W. J. BRYAN, *Secretary of State.*

MR. J. J. McARTHUR FOR HIS BRITANNIC MAJESTY.

GEORGE by the Grace of God, of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, King, Defender of the Faith, Emperor of India, &c. &c.

To All and Singular to whom these Presents shall come, Greeting:

Whereas by a Treaty concluded at Washington on the 11th day of April, 1908, between our Royal Predecessor His Majesty King Edward VII and our Good Friends the United States of America, respecting the Demarcation of the International Boundary between the United States and the Dominion of Canada, it was in effect provided that Commissioners should be appointed on Our part and on that of Our said Good Friends, and that the Commissioners so appointed should define and mark the Boundary Line, with the exception of that portion of it extending from the 45th Parallel of north latitude through the St. Lawrence River, the Great Lakes and connecting waterways to the mouth of the Pigeon River;

Now Know Ye that We, reposing especial trust and confidence in the approved learning, wisdom and fidelity of Our Trusty and Well-Beloved James Joseph McArthur, Esquire, Dominion Land Surveyor, have named and appointed, as We do by these Presents name and appoint him to be Our Commissioner for the purposes aforesaid and pursuant to the said Treaty, to meet the other Commissioner appointed or to be appointed in like manner by Our Good Friends the United States of America, to do and determine all such matters as are provided to be done by him under the said Treaty, in the manner therein provided.

In witness whereof We have signed these presents with Our Royal Hand.

Given at Our Court of Saint James the Twenty-sixth day of February One thousand Nine Hundred and Seventeen in the Seventh year of Our Reign.

By His Majesty's Command:

ARTHUR JAMES BALFOUR.

MR. E. LESTER JONES FOR THE UNITED STATES.

WOODROW WILSON,

PRESIDENT OF THE UNITED STATES OF AMERICA.

To all to whom these Presents shall come, Greeting:

Know Ye, that reposing special trust and confidence in the integrity and ability of E. Lester Jones, of Virginia, I do appoint him the expert Commissioner on the part of the United States for the purpose of more accurately defining and marking the international boundary line between the United States and the Dominion of Canada, under the provisions of Articles I, II, III, V, VI, VII, and VIII of the

treaty between the United States and Great Britain, signed at Washington on April 11, 1908, and do authorize and empower him to execute and fulfil the duties of this commission with all the powers, privileges and emoluments thereunto of right appertaining, during the pleasure of the President of the United States.

In testimony whereof, I have caused the Seal of the United States to be hereunto affixed.

Given under my hand, in the District of Columbia, this twenty-eighth day of February, in the year of our Lord one thousand nine hundred and twenty-one, and of the Independence of the United States of America the one hundred and forty-fifth.

[SEAL]

WOODROW WILSON.

By the President:

BAINBRIDGE COLBY, *Secretary of State*.

AGREEMENTS OF THE COMMISSIONERS AS TO THE MANNER IN
WHICH THE PROVISIONS OF ARTICLE VIII OF THE TREATY OF
1908 SHOULD BE CARRIED OUT.

At a meeting of the Commissioners on December 28, 1908, the appointments of the Commissioners were presented and found to be in due and proper form. At this and subsequent conferences, the Commissioners agreed that the provisions of Article VIII of the Treaty of 1908 should be carried out in the following manner:

I. That durable monuments should be placed at all governing points named in the description of the Boundary Line in the Treaty, except where existing lighthouses or other permanent structures would better serve the purpose, and that these monuments, lighthouses, or structures which reference the Boundary Line should be connected with the existing triangulation, and that detailed topographic maps necessary to define the shore line with reference to the mark should be made at each reference mark.

II. That the monuments erected should bear the lettering "Reference Mark" on one face and "Treaty of 1908" on the opposite face.

III. That each Commissioner should detail a surveyor to carry out on his Government's side of the Straits the operations set forth above.

IV. That as an examination of the Admiralty Chart on which the Boundary Line was marked at the Conference of 1873 showed that the turning points of the Boundary Line were placed midway between the high-water lines on the two shores, this rule was to be followed throughout in the demarcation of the Boundary Line.

V. That the initial point of the Boundary Line should be at the high water line on the west side of Point Roberts, where the land boundary along the forty-ninth parallel terminates, and that the Boundary Line should extend thence westward in a straight line to a point which is in the middle of the strait which separates Vancouver Island from the mainland and on the geodetic parallel passing through the stone monument erected in 1861 to mark the land boundary.

VI. That the United States Coast and Geodetic Chart No. 6300, which embodies the Admiralty Chart on which the boundary line was drawn at the Conference of 1873, should be used as a base for laying down the Boundary Line, and that inserts should be placed thereon to show the detailed topography at the reference marks

VII. That the reference marks should be shown on the Chart in red, the Boundary Line in black, and that the land areas should be tinted. That the turning points in the Boundary Line should be shown by small circles numbered consecutively from the forty-ninth parallel.

ACCOUNT OF FIELD OPERATIONS ON THE UNITED STATES SIDE OF THE STRAITS.

In June, 1909, Mr. Fremont Morse, Assistant, United States Coast and Geodetic Survey, who had been placed in charge of the field work on the United States side of the Straits, proceeded to Port Townsend, Wash., where he organized a party of



PILLAR POINT ROCK.

ten men, assembled the necessary equipment and supplies, including two landing boats, and chartered for the season a seaworthy launch, the *Spray*.

On June 26, the party, equipment and supplies, with the exception of the launch and landing boats, were transported by the steamer *Whatcom* to Port Crescent. The *Spray*, with the landing boats in tow, arrived there the same day.

The Tatoosh Island Lighthouse, which is on the United States shore at the entrance of Juan de Fuca Straits and is one of the governing points named in the description of the Boundary Line in the Treaty, was used as a reference mark. As this lighthouse is a brick and stone structure, the geographic position of which was already determined, and as a detailed map of the vicinity was available, it was not necessary to visit that point.

The party, therefore, on June 28 moved to Pysht and went into camp on the sand spit just east of Pillar Point, the next governing point on the United States shore named in the Treaty. From this camp the site for the boundary reference



PILLAR POINT REFERENCE MARK

monument at Pillar Point was selected, the necessary timber and brush cut, the monument erected, its geographic position determined by connecting with the existing triangulation stations, and a topographic map on a scale of 1:1,000 was made, showing the location of the monument with reference to the shore line.

On July 21 the party returned to Port Crescent and while camped there monument sites were selected, monuments erected, the necessary triangulation executed, and topographic maps were made at Tongue Point and Angeles Point.

On August 12 the party moved to and went into camp at Old Dungeness, the site of an abandoned town at the head of a land-locked harbor, about $2\frac{3}{4}$ miles west of the present village of New Dungeness. On the eastern end of the sand spit, about $2\frac{1}{4}$ miles north of New Dungeness, stands New

Dungeness Lighthouse, one of the oldest lighthouses on the Straits, which was adopted as a reference mark. As it is a brick and stone structure, and its geographic position had already been determined, it was only necessary to make a topographic map of the vicinity.

To reach the next camping place, Kanaka Bay on San Juan Island, the Strait had to be crossed at its widest place, a distance of over 20 miles, and as a heavy sea was likely to be encountered in crossing, it was decided as a matter of safety not to attempt to move the whole outfit at one trip. During the first trip across the Straits with half the outfit, on the morning of August 19, there was little wind and no sea, but while the outfit was being unloaded the wind started to blow from the west and in a short time a heavy sea was running, which made the trip back to Dunge-

ness a very rough one. When in the middle of the Straits the skiff in tow broke loose and was lost. All the next day the gale continued with increasing violence, and it was not safe to attempt to cross the Straits with the remaining outfit until the morning of the 21st.

From the camp at Kanaka Bay sites for monuments were selected, monuments erected, the necessary triangulation executed, and topographic maps were made at Iceberg Point on Lopez Island, and at Pile Point and near Andrews Bay on San Juan Island.



CAMP OF UNITED STATES PARTY AT OLD DUNGENESS

On September 13 and 14 the party moved to Prevost Harbor on Stuart Island. From this camp three concrete witness marks were set and connected to the Patos Island Lighthouse, which is a wooden structure, liable to destruction or replacement, and was adopted as a reference mark. The site for a monument was selected and the monument built at Turn Point on Stuart Island, and the necessary triangulation connection and topographic maps made.

On September 27 and 28 the party moved to the last camp of the season at Point Roberts, and while there the geographic position of the large boundary monument erected in 1861 to mark the land boundary along the 49th parallel, which had been adopted as a reference mark, was determined and a topographic map of the vicinity of this monument made.



POINT ROBERTS BOUNDARY MONUMENT.

All of the field work on the United States side of the strait having been completed, on October 14 the party moved to Anacortes and disbanded.

SUMMARY.

Concrete monuments to serve as boundary reference marks were built and connected with the existing triangulation at Pillar Point, Tongue Point, Angeles Point, Iceberg Point, Pile Point, Andrews Bay, and Turn Point, seven in all. Three witness marks were set and connected with the lighthouse on Patos Island. The large boundary monument on the west side of Point Roberts was connected with the triangulation. Topographic maps on a scale of 1:1,000 were made at Pillar Point, Tongue Point, Angeles Point, Dungeness Lighthouse, Iceberg Point, Pile Point, Andrews Bay, Turn Point, Patos Island Lighthouse, and Point Roberts.

ACCOUNT OF FIELD OPERATIONS ON THE CANADIAN SIDE OF THE STRAITS.

In June, 1909, Mr. George White-Fraser, D. T. S., who had been placed in charge of the field work on the Canadian side of the Straits, organized a party of six men and assembled the necessary equipment and supplies at Victoria, B. C. A 27-foot Columbia River boat, equipped with a 4-horsepower engine, a 20-foot Columbia River boat with sails, and a dinghy constituted the means of transportation.



KELP REEFS BEACON.

The first camp was on Discovery Island. The lighthouse on the island at Seabird Point was adopted as a reference mark and its geographic position was determined by connecting it with the near-by United States Coast and Geodetic Survey triangulation station "Discovery." This lighthouse is a frame structure, liable to destruction or replacement. Sites for three witness marks were therefore selected and marked, and the direction and distance from the lighthouse to the sites determined. A topographic map of the vicinity of the lighthouse on the scale 1:1440 was also made.

Kelp Reefs Beacon, the geographic position of which was already known and which had been adopted as a reference mark, was visited and examined by the party on their way to Moresby Island, their next camping place.

From the Moresby Island camp, the United States Coast and Geodetic Survey triangulation station mark at the triangulation station "Fairfax" was recovered and selected as a site for a reference mark to be constructed later, and a topographic map on the scale of 1:1800 was made of the vicinity.

The party then moved to Saturna Island. The lighthouse on the island at East Point, the geographic position of which was already determined, was adopted as a reference mark. The sites for three witness marks were selected, marked, and connected with the lighthouse, a frame structure liable to destruction or replacement, and a topographic map on the scale of 1:1800 was made of the vicinity.

The next camp was at the north end of Galiano Island where a traverse line was run from the United States Coast and Geodetic triangulation station "Galiano N. W.," southeast along the shore, a hub was located approximately on the 49th Parallel, and a topographic map on the scale of 1:1800 was made of the vicinity. On the completion of this work the party was disbanded.

Work was resumed in July, 1910, when Mr. White-Fraser, with a party organized in Victoria, B. C., in the launch *Starlight*, which had been chartered for the season, proceeded to Discovery Island, and constructed the three witness marks on the sites selected the previous season.

Fisgard Island Lighthouse, at the entrance of Esquimalt Harbor, about midway between Discovery Island and Race Rocks, was adopted as a reference mark. As the lighthouse is a brick and stone structure, the geographic position of which was known and a detailed map of the vicinity was available, it was not necessary for the party to visit it.

From Discovery Island the party moved to Beechy Head, going into camp at the nearest fresh water, $2\frac{1}{2}$ miles from the Point. From this camp the monument on Beechy Head was built and connected with the United States Coast and Geodetic Survey triangulation station "Beechy Head," a topographic map on the scale of 1:1800 was made of the vicinity, and the necessary work on Race Rocks was done. Considerable difficulty was experienced in landing on Race Rocks, as the current through the race was very strong, whether the tide was ebbing or flowing, and there were rough rips at either end. Race Rocks Lighthouse, a substantial stone structure, the geographic position of which was already known, was adopted as a reference mark and a detailed map on the scale of 1:600 was made of Race Rocks.

On the completion of the work at Beechy Head and Race Rocks, the party proceeded to Sheringham Point, but was unable to land on account of the heavy surf and continued on to Snuggery Cove, in Port San Juan. From here, after two unsuccessful attempts to land at Carmanah village, near Bonilla Point, and one at Sheringham Point, the party succeeded in landing on Sheringham Point, where a monument was erected and connected with the near-by triangulation station, and a topographic map on the scale of 1:1800 was made of the vicinity.

After completing the work on Sheringham Point, the party returned to Snuggery Cove, and, as it appeared unlikely that the weather conditions would permit landing

with the launch at Carmanah village, it was decided to wait for a steamer. The launch was released and the party, reduced to three men, embarked on the steamer *Tees* for Carmanah, but owing to the heavy surf, were unable to land at either Carmanah or Clahoose and were compelled to proceed to Bamfield, 32 miles farther on, and pack their outfit to Carmanah. The first half of the journey, over a road in course of construction, was good going, but the last half, along a cutting for a telegraph line and along the beach, was extremely laborious. Quarters for the party were provided by the lighthouse keeper at Carmanah, in accordance with previous arrangements.

The United States Coast and Geodetic Survey triangulation station mark at Bonilla had disappeared, but it was possible to determine its original position from the description of the station, and as the party had been unable to bring from Bamfield sufficient cement for the construction of a monument, a large tree growing on the Point was cut down and the stump shaped to resemble a monument, the position of which was referred to five trees and to two small concrete witness monuments erected on the nearest rock outcrop. A topographic map on the scale of 1:1800 was also made of the vicinity.

After completing the work at Bonilla Point, the party walked back to Bamfield and proceeded by steamer to Alberni, thence by stage to Cameron Lake and by train to Victoria, arriving there on December 22.

After the holidays, Mr. White-Fraser with five men proceeded from Victoria to Sydney, B. C., crossed by launch to Moresby Island, and, after having erected the monument on Fairfax Point, moved to Saturna Island and completed the work on the Canadian shore by setting the three concrete witness monuments to East Point Light, the sites for which had been previously determined and marked.

In 1918, a concrete monument to serve as a reference mark was built over one of the witness marks on Bonilla Point by a party in charge of Mr. F. A. McDiarmid, the stump monument previously located being used as a witness mark.



BONILLA POINT REFERENCE MARK.

SUMMARY.

Concrete monuments to serve as reference marks were built and connected with the existing triangulation at Fairfax Point, Beechy Head, and Sheringham Point, and a wooden monument, with witness marks, was erected on Bonilla Point and connected with the existing triangulation. Later, in 1918, a concrete monument was built over one of the witness marks on Bonilla Point, the wooden mark becoming a witness mark to the same. Three witness marks were set at Discovery Island Lighthouse on Sea Bird Point, and at East Point Lighthouse on Saturna Island, and connected with the lighthouse. Detailed topographic maps were made at the north end of Galiano Island, East Point Lighthouse, Fairfax Point, Discovery Island Lighthouse, Race Rocks Lighthouse, Beechy Head, Sheringham Point, and Bonilla Point.

DESCRIPTION OF THE INTERNATIONAL BOUNDARY LINE BETWEEN
THE UNITED STATES AND CANADA FROM THE WESTERN TERMINUS
OF THE LAND BOUNDARY ALONG THE 49TH PARALLEL, ON
THE WEST SIDE OF POINT ROBERTS, THROUGH GEORGIA, HARO,
AND JUAN DE FUCA STRAITS, TO THE PACIFIC OCEAN.

(Geographic Positions based on North American Datum.)

The Boundary Line as ascertained and reestablished consists of a series of connecting straight lines, the intersections of which are called "turning points." These turning points and the terminus at the Pacific Ocean are referenced by bearings and distances from reference marks.

Beginning at the high-water line on the western side of Point Roberts, the western terminus of the land boundary along the Forty-ninth Parallel, which is 323 feet west of the large stone Boundary monument established in 1861 by the Boundary Commissioners under the Treaty of 1846, this point of origin being in

Latitude $49^{\circ} 00' 08''.87$ N.
Longitude $123^{\circ} 05' 23''.65$ W.

The Boundary Line runs: Thence N. $89^{\circ} 54' 46''$ W., 55,582 feet to Turning Point No. 1, located in the middle of the channel which separates the continent from Vancouver Island, in

Latitude $49^{\circ} 00' 08''.87$ N.
Longitude $123^{\circ} 19' 17''.18$ W.

BEARING—

N. $89^{\circ} 54' 44''$ W., 55,905 feet from the Point Roberts monument mentioned above, in

Latitude $49^{\circ} 00' 08''.87$ N.
Longitude $123^{\circ} 05' 18''.81$ W.

N. $47^{\circ} 14' 07''$ W., 114,754 feet from Patos Island Lighthouse, in

Latitude $48^{\circ} 47' 21''.98$ N.
Longitude $122^{\circ} 58' 13''.79$ W.

Thence S. $50^{\circ} 33' 56''$ E., 97,870 feet through Georgia Strait to Turning Point No. 2, in

Latitude $48^{\circ} 49' 53''.94$ N.
Longitude $123^{\circ} 00' 27''.48$ W.

BEARING

N. $30^{\circ} 08' 47''$ W., 17,811 feet from Patos Island Lighthouse, in

Latitude $48^{\circ} 47' 21''.98$ N.
Longitude $122^{\circ} 58' 13''.79$ W.

N. $26^{\circ} 57' 13''$ E., 19,725 feet from East Point Lighthouse on Saturna Island, in

Latitude $48^{\circ} 47' 00''.47$ N.
Longitude $123^{\circ} 02' 41''.10$ W.

Thence due south, 23,390 feet, passing midway between the eastern point of Saturna Island and the western point of Patos Island, to Turning Point No. 3, in

Latitude $48^{\circ} 46' 03''.15$ N.

Longitude $123^{\circ} 00' 27''.48$ W.

BEARING

S. $48^{\circ} 46' 21''$ W., 12,001 feet from Patos Island Lighthouse, in

Latitude $48^{\circ} 47' 21''.98$ N.

Longitude $123^{\circ} 58' 13''.79$ W.

S. $57^{\circ} 01' 41''$ E., 10,671 feet from East Point Lighthouse on Saturna Island, in

Latitude $48^{\circ} 47' 00''.47$ N.

Longitude $123^{\circ} 02' 41''.10$ W.

Thence S. $67^{\circ} 01' 18''$ W., 68,038 feet, through Haro Strait to Turning Point No. 4, located midway between Fairfax Point on Moresby Island, and Turn Point on Stuart Island, in

Latitude $48^{\circ} 41' 40''.01$ N.

Longitude $123^{\circ} 16' 01''.09$ W.

BEARING

S. $75^{\circ} 35' 52''$ E., 7,676 feet, from Fairfax Point Reference Mark on Moresby Island, in

Latitude $48^{\circ} 41' 58''.86$ N.

Longitude $123^{\circ} 17' 51''.90$ W.

N. $75^{\circ} 33' 06''$ W., 7,600 feet, from Turn Point Reference Mark on Stuart Island, in

Latitude $48^{\circ} 41' 21''.31$ N.

Longitude $123^{\circ} 14' 11''.40$ W.

N. $7^{\circ} 56' 46''$ W., 53,891 feet, from Kelp Reefs Beacon, in

Latitude $48^{\circ} 32' 53''.36$ N.

Longitude $123^{\circ} 14' 10''.05$ W.

Thence S. $12^{\circ} 36' 36''$ E., 54,307 feet, through Haro Strait to Turning Point No. 5, located one nautical mile due east from the northwesternmost Kelp Reef, in

Latitude $48^{\circ} 32' 57''.03$ N.

Longitude $123^{\circ} 13' 04''.89$ W.

BEARING—

N. $85^{\circ} 08' 56''$ E., 4,400 feet, from Kelp Reefs Beacon, in

Latitude $48^{\circ} 32' 53''.36$ N.

Longitude $123^{\circ} 14' 10''.05$ W.

S. $85^{\circ} 12' 00''$ W., 12,198 feet, from Andrews Bay Reference Mark on San Juan Island, in

Latitude $48^{\circ} 33' 07''.14$ N.

Longitude $123^{\circ} 10' 04''.24$ W.

N. $2^{\circ} 03' 19''$ E., 45,480 feet, from Discovery Island Lighthouse, in

Latitude $48^{\circ} 25' 28''.54$ N.

Longitude $123^{\circ} 13' 29''.13$ W.

Thence S. $22^{\circ} 25' 53''$ E., 37,566 feet, through Haro Strait to Turning Point No. 6, located midway between Seabird Point on Discovery Island, and Pile Point on San Juan Island, in

Latitude $48^{\circ} 27' 14''.33$ N.

Longitude $123^{\circ} 09' 32''.25$ W.

BEARING—

N. $56^{\circ} 06' 24''$ E., 19,237 feet, from Discovery Island Lighthouse, in

Latitude $48^{\circ} 25' 28''.54$ N.

Longitude $123^{\circ} 13' 29''.13$ W.

S. $56^{\circ} 12' 18''$ W., 19,105 feet, from Pile Point Reference Mark on San Juan Island, in

Latitude $48^{\circ} 28' 59''.26$ N.

Longitude $123^{\circ} 05' 36''.73$ W.

S. $28^{\circ} 35' 59''$ E., 39,122 feet, from Kelp Reefs Beacon, in

Latitude $48^{\circ} 32' 53''.36$ N.

Longitude $123^{\circ} 14' 10''.05$ W.

Thence S. $44^{\circ} 08' 52''$ E., 15,594 feet, through Haro Strait to Turning Point No. 7, located on the north end of "Middle Bank," in

Latitude $48^{\circ} 25' 23''.89$ N.

Longitude $123^{\circ} 06' 51''.23$ W.

BEARING

S. $89^{\circ} 02' 04''$ E., 26,843 feet, from Discovery Island Lighthouse, in

Latitude $48^{\circ} 25' 28''.54$ N.

Longitude $123^{\circ} 13' 29''.13$ W.

S. $12^{\circ} 57' 57''$ W., 22,396 feet, from Pile Point Reference Mark on San Juan Island, in

Latitude $48^{\circ} 28' 59''.26$ N.

Longitude $123^{\circ} 05' 36''.73$ W.

N. $88^{\circ} 46' 46''$ W., 55,949 feet, from Iceberg Point Reference Mark on Lopez Island, in

Latitude $48^{\circ} 25' 12''.96$ N.

Longitude $122^{\circ} 53' 01''.97$ W.

Thence S. $32^{\circ} 40' 02''$ W., 60,128 feet, through Juan de Fuca Strait to Turning Point No. 8, located in the center of the fairway of Juan de Fuca Strait, in

Latitude $48^{\circ} 17' 04''.13$ N.

Longitude $123^{\circ} 14' 51''.06$ W.

BEARING—

S. $42^{\circ} 16' 16''$ E., 72,077 feet, from Fisgard Island Lighthouse off Vancouver Island, in

Latitude $48^{\circ} 25' 51''.05$ N.

Longitude $123^{\circ} 26' 47''.86$ W.

N. $42^{\circ} 01' 09''$ W., 50,261 feet, from New Dungeness Lighthouse, on spit of mainland, in

Latitude $48^{\circ} 10' 55''.95$ N.

Longitude $123^{\circ} 06' 33''.65$ W.

S. $6^{\circ} 11' 16''$ W., 51,415 feet, from Discovery Island Lighthouse, in

Latitude $48^{\circ} 25' 28''.54$ N.

Longitude $123^{\circ} 13' 29''.13$ W.

Thence S. $73^{\circ} 11' 45''$ W., 74,558 feet, through Juan de Fuca Strait to Turning Point No. 9, located midway between the lighthouse on Race Rocks, and Angeles Point on the mainland, in

Latitude $48^{\circ} 13' 30''.08$ N.
Longitude $123^{\circ} 32' 25''.11$ W.

BEARING

S. $5^{\circ} 05' 46''$ W., 26,899 feet, from Race Rocks Lighthouse, in

Latitude $48^{\circ} 17' 54''.47$ N.
Longitude $123^{\circ} 31' 49''.82$ W.

N. $5^{\circ} 04' 53''$ E., 27,148 feet, from Angeles Point Reference Mark, on mainland, in

Latitude $48^{\circ} 09' 03''.23$ N.
Longitude $123^{\circ} 33' 00''.62$ W.

N. $62^{\circ} 05' 36''$ E., 45,103 feet, from Tongue Point Reference Mark, on mainland, in

Latitude $48^{\circ} 10' 02''.18$ N.
Longitude $123^{\circ} 42' 13''.72$ W.

Thence N. $80^{\circ} 25' 46''$ W., 34,071 feet, through Juan de Fuca Strait to Turning Point No. 10, located midway between Beechy Head on Vancouver Island, and Tongue Point on the mainland, in

Latitude $48^{\circ} 14' 25''.68$ N.
Longitude $123^{\circ} 40' 41''.41$ W.

BEARING

S. $13^{\circ} 12' 36''$ W., 27,806 feet, from Beechy Head Reference Mark on Vancouver Island, in

Latitude $48^{\circ} 18' 52''.82$ N.
Longitude $123^{\circ} 39' 07''.54$ W.

N. $13^{\circ} 10' 18''$ E., 27,424 feet, from Tongue Point Reference Mark, on mainland, in

Latitude $48^{\circ} 10' 02''.18$ N.
Longitude $123^{\circ} 42' 13''.72$ W.

S. $59^{\circ} 35' 14''$ W., 41,727 feet, from Race Rocks Lighthouse, in

Latitude $48^{\circ} 17' 54''.47$ N.
Longitude $123^{\circ} 31' 49''.82$ W.

Thence N. $75^{\circ} 34' 18''$ W., 83,702 feet, through Juan de Fuca Strait, to Turning Point No. 11, located midway between Sheringham Point, Vancouver Island, and Pillar Point, on the mainland, in

Latitude $48^{\circ} 17' 49''.75$ N.
Longitude $124^{\circ} 00' 40''.20$ W.

BEARING

S. $37^{\circ} 10' 05''$ W., 36,649 feet, from Sheringham Point Reference Mark on Vancouver Island, in

Latitude $48^{\circ} 22' 38''.07$ N.
Longitude $123^{\circ} 55' 12''.76$ W.

N. $37^{\circ} 01' 56''$ E., 36,714 feet, from Pillar Point Reference Mark, on mainland, in

Latitude $48^{\circ} 13' 00''.66$ N.
Longitude $124^{\circ} 06' 07''.21$ W.

S. $85^{\circ} 57' 06''$ W., 87,628 feet, from Beechy Head Reference Mark on Vancouver Island, in

Latitude $48^{\circ} 18' 52''.82$ N.
Longitude $123^{\circ} 39' 07''.54$ W.

Thence N. $67^{\circ} 17' 07''$ W., 187,995 feet, through Juan de Fuca Strait, to Point No. 12, the terminus at the Pacific Ocean, located midway between Bonilla Point on Vancouver Island, and Tatoosh Island Lighthouse in the State of Washington, in

Latitude $48^{\circ} 29' 38''.11$ N.

Longitude $124^{\circ} 43' 34''.69$ W.

BEARING

S. $3^{\circ} 33' 45''$ W., 37,301 feet, from Bonilla Point Reference Mark on Vancouver Island, in

Latitude $48^{\circ} 35' 45''.47$ N.

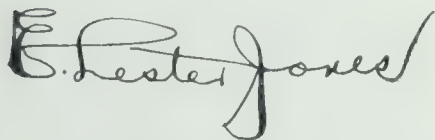
Longitude $124^{\circ} 43' 00''.28$ W.

N. $3^{\circ} 32' 54''$ E., 37,233 feet, from Tatoosh Island Lighthouse in the State of Washington, in

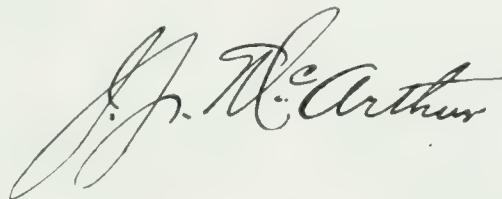
Latitude $48^{\circ} 23' 31''.41$ N.

Longitude $124^{\circ} 44' 08''.90$ W.

We certify that the foregoing is a true description of the International Boundary Line between the United States and Canada from the western terminus of the land boundary along the forty-ninth parallel, on the west side of Point Roberts, through Georgia, Haro, and Juan de Fuca Straits, to the Pacific Ocean, as reestablished in accordance with Article VIII of the Treaty between the United States and Great Britain signed at Washington, April 11, 1908.



United States Commissioner.



His Britannic Majesty's Commissioner.

12 INTERNATIONAL BOUNDARY—49TH PARALLEL TO PACIFIC OCEAN

GEOGRAPHIC POSITIONS OF INITIAL POINT, TURNING POINTS, AND TERMINUS OF THE INTERNATIONAL BOUNDARY LINE BETWEEN THE UNITED STATES AND CANADA THROUGH GEORGIA, HARO, AND JUAN DE FUCA STRAITS

North American Datum

Boundary Point.	Latitude and Longitude	Azimuth	Back azimuth	To Turning Point or Refer- ence Mark	Horizontal Distance, Meters	Dis- tance, Feet
Initial Point—Highwater mark west of Point Rob- erts Monument.	49 00 08.87 123 05 23.65	90 05 44 269 59 58	269 54 46 90 00 02	Turning Point No. 1 Point Roberts Monument.	4,228948 4,995456	14,582 16,375
Turning Point No. 1	49 00 08.87 123 19 17.48	399 26 04 312 30 01 269 54 44	129 40 16 132 45 53 90 05 16	Turning Point No. 2 Patos Island Lighthouse Point Roberts Monument	4,44663 4,543785 4,231468	9,880 14,154 55,905
Turning Point No. 2	48 49 53.94 123 00 27.48	0 00 00 26 58 54 329 49 33	180 00 00 206 57 13 149 51 13	Turning Point No. 3 East Point Lighthouse..... Patos Island Lighthouse	3,883041 3,779033 3,531113	23,396 19,725 17,811
Turning Point No. 3	48 46 03.15 123 00 27.48	67 01 18 123 00 00 228 14 43	246 49 36 302 58 49 48 16 24	Turning Point No. 4 East Point Lighthouse . . . Patos Island Lighthouse	4,316769 3,542214 3,563222	68,058 10,671 12,001
Turning Point No. 4	48 41 40.01 123 16 01.09	347 23 24 342 01 50 104 25 32 284 25 32	167 25 36 172 03 44 284 24 08 104 26 54	Turning Point No. 5..... Kelp Reefs Beacon Fairfax Point Monument... Turn Point Monument. . . .	4,218871 4,245535 3,369151 3,364823	54,307 53,891 7,676 7,600
Turning Point No. 5..	48 32 57.03 123 13 04.89	337 34 07 2 03 37 85 09 45 265 09 45	157 36 47 182 03 19 265 08 56 85 12 00	Turning Point No. 6 Discovery Island Lighthouse. Kelp Reefs Beacon Andrews Bay Monument...	4,058844 4,141832 3,127487 3,570309	37,566 45,480 4,400 12,198
Turning Point No. 6...	48 27 14.33 123 09 32.25	315 51 08 56 09 22 151 27 29 236 09 22	135 53 08 236 06 24 331 24 01 56 42 18	Turning Point No. 7..... Discovery Island Lighthouse. Kelp Reefs Beacon Pile Point Monument	3,676972 3,768159 4,076435 3,765164	15,594 19,237 39,122 19,105
Turning Point No. 7.	48 25 23.89 123 06 51.23	32 40 02 91 02 54 147 03 39 192 57 02 271 02 54	212 34 03 270 57 56 326 58 11 12 57 57 91 13 44	Turning Point No. 8..... Discovery Island Lighthouse Kelp Reefs Beacon..... Pile Point Monument Iceberg Point Monument...	4,263089 3,912850 4,218841 3,834193 4,231808	60,128 26,843 54,303 22,396 55,949
Turning Point No. 8	48 17 04.13 123 14 51.06	73 11 45 137 52 40 186 10 15 317 52 40	252 58 38 317 43 44 6 11 16 137 58 51	Turning Point No. 9..... Fisgard Island Lighthouse... Discovery Island Lighthouse. New Dungeness Lighthouse.	4,356512 4,341814 4,195108 4,185245	74,558 72,077 51,415 50,261
Turning Point No. 9.	48 13 30.08 123 32 25.11	99 34 14 185 05 19 5 05 19 62 12 55	279 28 03 5 05 46 185 04 53 242 05 36	Turning Point No. 10 Race Rocks Lighthouse . . . Angeles Point Monument... Tongue Point Monument...	4,016402 3,913746 3,917753 4,138221	34,071 26,899 27,148 45,103
Turning Point No. 10.	48 14 25.68 123 40 41.41	104 25 42 193 11 26 239 28 38 13 11 26	284 10 47 13 12 36 59 35 14 193 10 18	Turning Point No. 11 Beechy Head Monument... Race Rocks Lighthouse . . . Tongue Point Monument . . .	4,406753 3,928153 4,104433 3,922152	83,702 27,806 41,727 27,424
Turning Point No. 11	48 17 49.75 124 00 40.20	112 42 53 217 06 00 265 41 01 37 06 00	292 10 48 37 10 05 85 57 06 217 01 56	Point No. 12 (Terminus).... Sheringham Point Monu- ment. Beechy Head Monument... Pillar Point Monument.....	4,758163 4,048075 4,426659 4,048855	187,995 36,649 87,628 36,714
Point No. 12 (Terminus)...	48 29 38.11 124 43 34.69	3 33 20 183 33 20	183 32 54 3 33 45	Tatoosh Island Lighthouse. Bonilla Point Monument...	4,054945 4,055732	37,233 37,301

LIST OF REFERENCE MARKS WHICH DETERMINE THE LOCATION OF
THE INTERNATIONAL BOUNDARY LINE BETWEEN THE UNITED
STATES AND CANADA, THROUGH GEORGIA, HARO, AND JUAN DE
FUCA STRAITS.

POINT ROBERTS REFERENCE MARK. Referencing Boundary Turning Point No. 1
and marking the land boundary along the
49th Parallel.

Reference mark is a granite obelisk on east side of highway, on high bluff on west shore of Point Roberts, Whatcom County, Wash., about 300 feet inshore and about 150 feet above high water. Monument was built in 1861 jointly by engineers of the United States and Canadian Governments to mark the west end of the boundary along the forty-ninth parallel from the Gulf of Georgia to the Lake of the Woods. It is about 20 feet in height and bears inscriptions which identify it.

Geographic position of mark determined by Fremont Morse, 1909.

PATOS ISLAND REFERENCE MARK. Referencing Boundary Turning Points Nos. 2
On the United States side. and 3.

Reference mark is Patos Island Lighthouse, a white square frame light tower on fog-signal house, on the northwest end of Patos Island, about 13 nautical miles south and a little east of Point Roberts, Whatcom County, Wash. The point of reference is the pinnacle or culmination of the roof of the lantern, the position of which is witnessed as follows:

1. A drill hole, in solid sandstone and conglomerate on the point outside of the old stake light, bears N. $50^{\circ} 27'$ W. (true), 110.76 feet distant. The drill hole is plugged with wood, and over it is centered a square concrete block 1 foot in height, with drill hole in center of top surface.

2. A drill hole, in the solid sandstone of the bluff west of the lighthouse, bears S. $73^{\circ} 38'$ W. (true), 54.92 feet distant. The drill hole is plugged with wood, and over it is centered a triangular shaped concrete block 1 foot in height, with drill hole in center of top surface.

3. A drill hole, near the edge of the solid sandstone bluff west of the flagstaff, bears S. $10^{\circ} 09'$ W. (true), 143.21 feet distant. The drill hole is plugged with wood and over it is centered a hexagonal concrete block 1 foot in height, with drill hole in center of top surface.

Witness marks established and geographic position of mark determined by Fremont Morse, 1909.



EAST POINT LIGHTHOUSE SATURNA ISLAND



PATOS ISLAND LIGHTHOUSE.

EAST POINT REFERENCE MARK.

On the Canadian side.

Referencing Boundary Turning Points Nos. 2 and 3.

Reference mark is Saturna Island Lighthouse on east end of Saturna Island, Cowichan District, British Columbia; white square frame light tower, with dwelling attached, about 1,000 feet south of extreme tip of East Point, about 75 feet above high water and about 75 feet inshore on a prominent bluff. The point of reference is the pinnacle or culmination of the roof of the lantern, the position of which is witnessed by three marks lying in a right line through the reference mark as follows:

1. A copper bolt, set in center of a circular concrete block 15 inches in diameter and 15 inches in height, bears N. $28^{\circ} 26' E.$ (true), 525.1 feet distant.

2. A copper bolt, set in center of a concrete block in the form of a frustum of a pyramid, base 20 inches square, top 6 inches square, height 15 inches, bears N. $28^{\circ} 26' E.$ (true), 323.0 feet distant.

3. A copper bolt, set in center of a concrete block in the form of a frustum of a pyramid, base 20 inches square, top 6 inches square, height 15 inches, bears N. $28^{\circ} 26' E.$ (true), 239.2 feet distant.

Witness marks established by George White-Fraser, 1911. Geographic position of mark determined by Fremont Morse, 1909.



TURN POINT REFERENCE MARK ON STUART ISLAND.

TURN POINT REFERENCE MARK.

On the United States side.

Referencing Boundary Turning Point No. 4: reference mark is in line with Turning Point No. 4 and Fairfax Point Reference Mark.

Reference mark is a concrete monument 5 feet 8 inches high, on Turn Point on the northwesterly end of Stuart Island, San Juan County, Wash. The monument is witnessed by Turn Point stake light, which bears S. $27^{\circ} 31' E.$ (true), 4.76 feet distant.

Monument set and geographic position determined by Fremont Morse, 1909.

FAIRFAX POINT REFERENCE MARK.
On the Canadian side.

Referencing Boundary Turning Point No. 4; reference mark is in line with Turning Point No. 4 and Turn Point Reference Mark.

Reference mark is a concrete monument $4\frac{1}{2}$ feet high, on Fairfax Point on the southeast end of Moresby Island, Cowichan District, British Columbia. The monument is centered over the United States Coast and Geodetic Survey triangulation station "Fairfax," which is 10 to 15 feet above high water, on a rocky point which at high water is cut off from the main island. The monument is witnessed by an iron pin, set in the rock ledge of the first summit on the main island, which bears N. $68^{\circ} 56'$ W. (true), 427.9 feet distant.

Monument set by George White-Fraser, 1911. Geographic position determined by J. J. Gilbert, United States Coast and Geodetic Survey, 1894.

KELP REEFS REFERENCE MARK.
On the Canadian side.

Referencing Boundary Turning Point No. 5; reference mark is in line with Turning Point No. 5 and Andrews Bay Reference Mark.

Reference mark is Kelp Reefs Beacon, on the northeast reef of Kelp Reefs, about 3 nautical miles southeast of Sidney Island, Esquimalt District, British Columbia. The structure sets on a pinnacle of rock of the reef and consists of a cylindrical steel tank on conical stone base, surmounted by a pyramidal skeleton steel superstructure supporting a lantern, the center of which is the point of reference.

Geographic position of mark determined by J. J. Gilbert, United States Coast and Geodetic Survey, 1894.

ANDREWS BAY REFERENCE MARK.
On the United States side.

Referencing Boundary Turning Point No. 5; reference mark is in line with Turning Point No. 5 and Kelp Reefs Reference Mark.

Reference mark is a concrete monument 5 feet 8 inches high, on a point of land just north of Andrews Bay, on west side of San Juan Island, San Juan County, Wash. The point of land is nearly due east of Kelp Reefs Beacon, and is identified by two rocks, awash, which lie northwest from it about 100 yards offshore. The monument is centered over a drill hole, plugged with wood, on the rocky ledge a few feet above high water, close to earth bank which rises back of it, and is witnessed by three marks as follows:

1. An arrow cut in rock bears southwest 21.7 feet distant;
2. An arrow cut in rock bears southeast 28.2 feet distant;
3. A fir tree, 3 feet in diameter, blazed and marked "38 feet to Monument," bears N. 30° E. (true).

Monument set, witness marks established, and geographic position determined by Fremont Morse, 1909.

PILE POINT REFERENCE MARK.
On the United States side.

Referencing Boundary Turning Point No. 6; reference mark is in line with Turning Point No. 6 and Discovery Island Reference Mark.

Reference mark is a concrete monument 5 feet 8 inches high, on Pile Point, on southwestern side of San Juan Island, San Juan County, Wash. The monument is set on solid rock, about 100 feet inshore, and about 20 feet above high water. It is plainly visible from Kanaka Village. It is witnessed by triangulation station "Pile Point," a drill hole in solid rock, which bears S. $10^{\circ} 43' W.$ (true), 77.5 feet distant.

Monument set and geographic position determined by Fremont Morse, 1909. Witness mark, triangulation station "Pile Point," established by J. J. Gilbert, United States Coast and Geodetic Survey, 1894.



DISCOVERY ISLAND LIGHTHOUSE

DISCOVERY ISLAND REFERENCE MARK.
On the Canadian side.

Referencing Boundary Turning Points Nos. 6 and 7; reference mark is in line with Turning Point No. 6 and Pile Point Reference Mark; it is also in line with Boundary Turning Point No. 7 and Iceberg Point Reference Mark.

Reference mark is Discovery Island Lighthouse, a white, square frame tower, 47 feet high, with dwelling attached, on eastern extremity of Discovery Island; about 3 nautical miles off Vancouver Island, due east of the town of Victoria, Esquimalt District, British Columbia. The point of reference is the pinnacle or

culmination of the roof of the lantern, the position of which is witnessed by three marks lying in a right line through the reference mark as follows:

1. A copper bolt, set in center of a circular concrete block 15 inches in diameter and 15 inches in height, bears N. $11^{\circ} 45'$ W. (true), 383.3 feet distant.
2. A copper bolt, set in center of a circular concrete block 15 inches in diameter and 15 inches in height, bears N. $11^{\circ} 45'$ W. (true), 299.1 feet distant.
3. A copper bolt, set in center of a circular concrete block 15 inches in diameter and 15 inches in height, bears N. $11^{\circ} 45'$ W. (true), 222.3 feet distant.

Geographic position of reference mark determined and witness marks established by George White-Fraser, 1910.

ICEBERG POINT REFERENCE MARK.

On the United States side.

Referencing Boundary Turning Point No. 7; reference mark is in line with Turning Point No. 7 and Discovery Island Lighthouse.

Reference mark is a concrete monument 5 feet 8 inches high, on Iceberg Point, Lopez Island, San Juan County, Wash., about $\frac{1}{2}$ mile from the southwest end of the island. The monument is set on solid rock about 130 feet above high water and about 30 feet southwest of the highest point of a rocky hill, and is witnessed by the triangulation station "Iceberg," a hole in the rock ledge on top of rocky hill, which bears N. $29^{\circ} 14'$ E. (true), 29.2 feet distant.

Monument set and geographic position determined by Fremont Morse, 1909. Triangulation station established and located by G. Davidson, United States Coast and Geodetic Survey, 1854.

FISGARD ISLAND REFERENCE MARK.

On the Canadian side.

Referencing Boundary Turning Point No. 8; reference mark is in line with Turning Point No. 8 and New Dungeness Reference Mark.

Reference mark is Fisgard Island Lighthouse, on Fisgard Island on west side of the entrance to Esquimalt Harbor, about due west of the town of Victoria, Vancouver Island, Esquimalt District, British Columbia; a white circular brick tower 56 feet high, with red brick building attached. The point of reference is the pinnacle or culmination of the roof of the lantern.

Geographic position of mark determined by J. S. Lawrence, United States Coast and Geodetic Survey, 1869.

NEW DUNGENESS REFERENCE MARK.

On the United States side.

Referencing Boundary Turning Point No. 8; reference mark is in line with Turning Point No. 8 and Fisgard Island Reference Mark.

Reference mark is New Dungeness Lighthouse on outer end of New Dungeness spit, south shore of Juan de Fuca Strait, Clallam County, Wash.; a tapering circular brick tower with house attached. Lower half of the tower painted white and upper half black, and the lantern red. The point of reference is the pinnacle or culmination of the roof of the lantern.

Geographic position of mark determined by J. S. Lawrence, United States Coast and Geodetic Survey, 1867.



FISCARD ISLAND LIGHTHOUSE



NEW DUNGENESS LIGHTHOUSE.

RACE ROCKS REFERENCE MARK.

On the Canadian side.

Referencing Boundary Turning Point No. 9
reference mark is in line with Turning Point
No. 9 and Angeles Point Reference Mark.

Reference mark is Race Rocks Lighthouse on Race Rocks off Cape Calver, the southerly point of the easterly end of Vancouver Island, British Columbia; a circular stone tower about 105 feet high, with house attached. The tower is painted black and white in horizontal bands, and is set on rock about 25 feet above high water. The point of reference is the pinnacle or culmination of the roof of the lantern.

Geographic position of mark determined by J. S. Lawrence, United States Coast and Geodetic Survey, 1867.



RACE ROCKS LIGHTHOUSE

ANGELES POINT REFERENCE MARK.

On the United States side.

Referencing Boundary Turning Point No. 9:
reference mark is in line with Turning Point
No. 9 and Race Rocks Lighthouse.

Reference mark is a concrete monument 5 feet 8 inches high, on Angeles Point, about 2,500 feet east of the present mouth of Elwha River, Clallam County, Wash. The point is formed by a gravel and cobble spit, and behind this spit is a fresh-water slough. The monument stands near the inshore of this slough on a point between the slough and a bight that makes in from it on land owned by Mr. Hjorth.

Reference mark is witnessed as follows:

1. A fir tree, $3\frac{1}{2}$ feet in diameter, blazed and marked "272 feet to Monument," bears due south.
2. A fir tree, 16 inches in diameter, blazed and marked "279 feet to Monument," bears S. 45° E. (true).

Monument set, witness marks established, and geographic position determined by Fremont Morse, 1909.

BEECHY HEAD REFERENCE MARK. Referencing Boundary Turning Point No. 10;
On the Canadian side. reference mark is in line with Turning Point
No. 10 and Tongue Point Reference Mark.

Reference mark is a concrete monument $4\frac{1}{2}$ feet high, on the most southeasterly point of a prominent summit of Beechy Head on Vancouver Island, Esquimalt District, British Columbia. The monument is about 100 feet above high water and is witnessed as follows:

1. The most southern summit of Beechy Head, a prominent point of about the same elevation, bears southwest about 175 feet distant.

2. Triangulation station, "Beechy Head" which is marked by a cement pier, bears N. $10^{\circ} 06' 20''$ W., 5,652 feet distant (not visible from the monument).

Monument set and geographic position determined by George White-Fraser, 1910.

TONGUE POINT REFERENCE MARK. Referencing Boundary Turning Point No. 10;
On the United States side. reference mark is in line with Turning Point
No. 10 and Beechy Head Reference Mark.

Reference mark is a concrete monument 5 feet 8 inches high, on Tongue Point, Clallam County, Wash. The monument is set on solid rock, about 24 feet above high water, on the most northern extremity of the point, and is witnessed as follows:

1. A fir tree, 9 inches in diameter, marked "34 feet to Monument," bears S. 50° E. (true).

2. A fir tree, 9 inches in diameter, blazed and marked "36 feet to Monument," bears South (true).

3. A fir tree, 2 feet in diameter, marked with blaze and wire nail, and being the station mark of the U. S. Coast and Geodetic Survey triangulation station "Cliff," bears S. $65^{\circ} 44'$ W. (true), 370.7 feet distant.

Monument set and geographic position determined by Fremont Morse, 1909. Witness mark, triangulation station "Cliff," established by J. J. Gilbert, United States Coast and Geodetic Survey, 1892.

SHERINGHAM POINT REFERENCE MARK. Referencing Boundary Turning Point No. 11;
On the Canadian side. reference mark is in line with Turning Point
No. 11 and Pillar Point Reference Mark.

Reference mark is a concrete monument $4\frac{1}{2}$ feet high, on Sheringham Point, Vancouver Island, Esquimalt District, British Columbia. The monument stands on solid rock about 20 feet above high-water line, near the center of a conical point about 100 feet in diameter projecting about 200 feet from the general shore line, and is visible from passing boats.

Triangulation station "Sheringham Point," which is marked by a concrete pier, bears N. $59^{\circ} 42'$ W. (true), 501.8 feet distant.

Monument set and geographic position determined by George White-Fraser, 1910. Triangulation station "Sheringham Point," established by J. J. Gilbert, United States Coast and Geodetic Survey, 1892.

PILLAR POINT REFERENCE MARK.

On the United States side.

Referencing Boundary Turning Point No. 11;
reference mark is in line with Turning Point
No. 11 and Sheringham Point Reference Mark.

Reference mark is a concrete monument 5 feet 8 inches high, on Pillar Point, Clallam County, Wash. The monument is set on solid rock, about 60 feet above high water, in the saddle between the mainland and the large pillar rock forming the point, and is witnessed as follows:

1. A fir tree, 3 feet in diameter, blazed and marked "15 feet to Mon.," bears N. 89° E. (true).

2. A fir stump, 24 inches in diameter, blazed and marked "13 ft. to Mon.," bears S. 50° E. (true).

3. A fir stump, 18 inches in diameter, blazed and marked "13 ft. to Mon.," bears S. 45° E. (true).

4. A fir stump, 18 inches in diameter, blazed and marked "40 ft. to Mon.," bears S. 60° W. (true).

Monument set and witnessed, and geographic position determined by Fremont Morse, 1909.



TATOOSH ISLAND, OR CAPE FLATTERY, LIGHTHOUSE.

CAPE FLATTERY OR TATOOSH ISLAND Referencing Point 12, the terminus of the
REFERENCE MARK.

On the United States side.

Boundary at the Pacific Ocean; reference
mark is in line with Point 12 and Bonilla
Point Reference Mark.

Reference mark is Cape Flattery or Tatoosh Island Lighthouse, on Tatoosh Island, on south side of entrance to Juan de Fuca Strait, about $\frac{1}{2}$ mile northwesterly of Cape Flattery, Clallam County, Wash. The lighthouse is a white conical tower

on a gray sandstone dwelling, the lantern is painted black, and the point of reference is the pinnacle or culmination of the roof of the lantern.

Geographic position of mark determined by J. J. Gilbert, United States Coast and Geodetic Survey, 1893.

BONILLA POINT REFERENCE MARK.

On the Canadian side.

Referencing Point 12, the terminus of the Boundary at the Pacific Ocean; reference mark is in line with Point 12 and Cape Flattery or Tatoosh Island Reference Mark.

Reference mark is a concrete monument $4\frac{1}{2}$ feet high, with the words "Reference Mark" and "Treaty 1908" stamped in the concrete base of the monument instead of being shown, as on all other monuments on the Canadian side, on plates attached to the monument. It is on the north side of the entrance to Juan de Fuca Strait, on Bonilla Point, Vancouver Island, Cowichan District, British Columbia, set on solid rock about 20 feet above and 100 feet back from high water shore line. Ground adjacent to monument is covered with brush. Monument is witnessed as follows:

1. A center mark, in concrete block 10 inches square and 18 inches deep, bears N. $41^{\circ} 57'$ W. (true), 26 feet distant.

2. A large stump, hewn to the shape and size of the monument, bears S. $41^{\circ} 57'$ E. (true), 593 feet distant.

Witness marks established, and geographic position determined by George White-Fraser, 1910. Monument erected by F. A. McDiarmid, 1918.

GEOGRAPHIC POSITIONS OF REFERENCE MARKS WHICH DETERMINE THE LOCATION OF THE INTERNATIONAL BOUNDARY LINE BETWEEN THE UNITED STATES AND CANADA THROUGH GEORGIA, HARO, AND JUAN DE FUCA STRAITS.

North American Datum.

Boundary Reference Mark	Latitude and longitude.	Azimuth	Back azimuth	To station.	Logarithm of distance in Meters	Distance in Feet
Point Roberts Monument	49 00 08 S. 123 05 18 S1	57 49 42.5	233 38 21.9	Rock	1.326677	69,608
		60 04 15.3	239 52 40.7	Galiano S. E.	1.335228	70,992
		92 15 08.2	271 53 15.0	Galiano N. W.	1.519401	116,249
Patos Island Lighthouse...	48 47 21.98 122 58 13.79	32 29 35.4	212 26 28.7	Dry	3.975661	31,020
		356 42 47.6	156 32 48.4	Patos	2.672873	1,545
East Point Lighthouse	48 47 00.47 123 02 41.10	263 01 44.3	83 05 05.3	Patos Island Lighthouse	3.740111	18,034
		267 56 28.3	87 59 50.4	Patos	3.739157	18,007
		356 59 17.7	176 59 31.8	Dry...	3.864676	24,025
Turn Point Monument	48 41 21.31 123 11 11.40	332 28 59	152 28 59	Turn Point Light	0.16147	18
Fairfax Point Monument ..	48 41 58.86 123 17 51.90	294 35 49.2	114 39 41.7	Tiptop	3.818346	23,138
		337 17 46.6	157 48 48.5	Tom	3.640224	14,329
Kelp Reefs Beacon.....	48 32 53.36 123 14 10.05	39 14 46.3	219 11 44.6	Gordon Head.....	3.896194	25,833
		209 49 47.2	29 51 22.5	Maple.....	3.719012	17,179
		290 07 53.9	110 14 14.0	Bellevue.....	3.766056	19,144
Andrews Bay Monument ..	48 33 07.44 123 10 04.24	85 12 00.4	265 08 56.2	Kelp Reefs Beacon.....	3.704084	16,598
		149 25 06.1	329 23 37.1	Maple.....	3.679598	15,689
		349 52 05.3	169 52 21.2	Bellevue.....	3.393606	8,124
Pile Point Monument	48 28 59.26 123 05 36.73	40 42 38	190 42 38	Pile Point	1.37328	77.5
Discovery Island Light house.	48 25 28.54 123 13 29.13	148 41 10.4	328 41 07.1	Discovery.....	2.238519	568
		342 44 45.5	162 49 47.8	Dungeness.....	4.450154	92,499
Iceberg Point Monument..	48 25 12.96 122 53 01.97	209 13 55	29 13 55	Iceberg.....	0.94939	29.2
Fisgard Island Lighthouse..	48 25 51.05 123 26 47.86	25 34 53.2	205 33 30.2	Albert Head	3.723174	17,344
		252 01 41.9	72 10 43.3	Tolmie	3.976677	31,093
New Dungeness Light house.	48 10 55.95 123 06 33.65	95 28 58.4	275 28 50.5	Dungeness	2.344347	725
		162 20 12.0	342 14 58.6	Discovery.....	1.454052	93,333
Race Rocks Lighthouse	48 17 54.47 123 31 49.82	237 45 17.9	57 58 57.2	Discovery.....	1.425677	87,430
		292 24 46.5	112 42 59.5	Dungeness.....	1.526834	110,362
Angeles Point Monument..	48 09 03.23 123 33 00.62	95 54 47.4	275 48 44.5	Striped Peak.....	4.005157	33,200
		158 27 33.6	338 22 49.0	Beechy Head.....	1.330563	70,234
		185 04 52.9	5 05 45.7	Race Rocks Lighthouse	4.216784	54,046
Beechy Head Monument ..	48 18 52.82 123 39 07.74	169 53 38.9	349 53 27.9	Beechy Head.....	3.236194	5,652
Tongue Point Monument ..	48 10 02.18 123 42 13.72	65 44 46	245 44 42	Cliff.....	2.05308	371
Sheringham Point Monument.	48 22 38.07 123 55 12.76	120 18 10	300 18 05	Sheringham.....	2.18455	502
Pillar Point Monument....	48 13 00.66 124 06 07.21	204 07 02	24 07 03	Pillar Point.....	1.70757	167
Tatoosh Lighthouse	48 23 31.41 124 11 08.90	183 51 42.0	3 52 37.5	Bonilla.....	1.353263	74,003
		274 59 55.1	91 59 59.3	Tatoosh.....	2.058957	376
Bonilla Point Monument...	48 35 45.47 124 43 00.28	326 18 43	146 18 47	Bonilla Point.....	2.30925	669

DESCRIPTION OF FIELD METHODS.

TRIANGULATION.

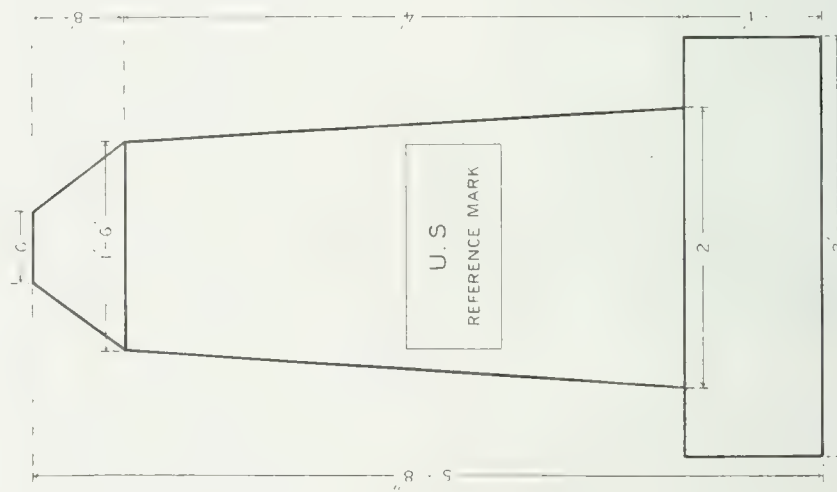
The geographic positions of reference marks not already known were in most cases determined by triangulation from two or more triangulation stations of the United States Coast and Geodetic Survey. When a reference mark was near a triangulation station, the position of the mark was determined by a measured distance and direction from the station. Angles were measured by the repetition method with a 6½-inch theodolite graduated to 10 minutes and reading by two verniers to 10 seconds. When distances were measured, the work was generally done with a steel tape, measuring forward and back. In a few instances, where it was necessary to determine distances across intervening water, rough ground, or through obstructions, they were obtained by triangulation from a measured base or by the stadia.



PILE POINT REFERENCE MARK

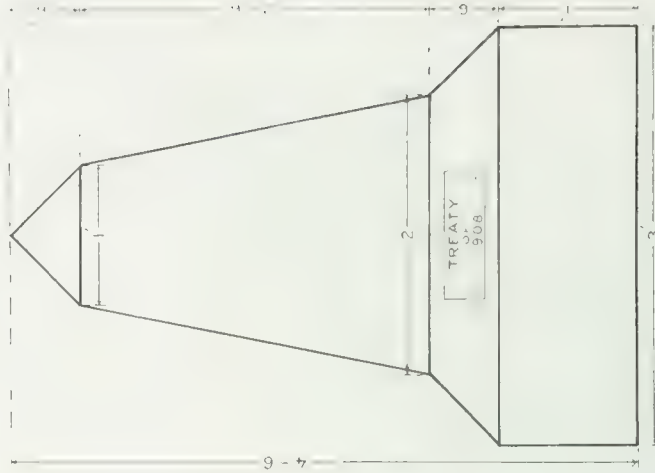
TOPOGRAPHY.

The detailed topographic maps of the immediate vicinities of the reference marks on field scales, ranging from 1:1000 to 1:1800, were made with planetable, telescopic alidade, and stadia rod or steel tape. These maps were controlled horizontally by transit and tape traverse lines connected to the reference marks, or by schemes of planetable triangulation developed from measured bases and tied to the reference marks. Elevations were determined by vertical angles and were based on high-water datum at the adjacent shore line.



DETAILS OF MONUMENTS ON THE UNITED STATES SIDE

Monuments are constructed of concrete



DETAILS OF MONUMENTS ON THE CANADIAN SIDE.

REFERENCE MARKS.

The location of the Boundary Line through the Straits is referenced by eight lighthouses and the large stone boundary monument on Point Roberts, which were adopted as reference marks, and by eleven concrete monuments constructed for that purpose. The reference marks are so located that in nearly every case a straight line joining a pair of them passes through a Boundary Turning Point.

The eleven monuments which it was necessary to erect, four in Canada and seven in the United States, were constructed of concrete in accordance with the designs shown on the preceding page. The monuments were cast in place, in wooden forms, a mixture of one part cement, two parts sand, and four parts broken stone being used.

The monuments on the United States side of the Straits are each in the form of a column resting on a base 1 foot high and 3 feet square, which is either bolted to solid rock or extended well below the surface of the ground to a good foundation. The column is 2 feet square at the base and is 4 feet 8 inches high, tapering to a cross section $1\frac{1}{2}$ feet square 4 feet above the base, then tapering abruptly to a 6-inch square flat top. The side of the monument facing the Boundary Line bears the inscription "TREATY OF 1908," and the opposite side, facing inland, the inscription "UNITED STATES REFERENCE MARK." The inscriptions were cast in the concrete sides of the monuments by placing on the inside of the forms brass plates bearing, in reverse, the letters of the inscription.

The monuments on the Canadian side of the Straits are $4\frac{1}{2}$ feet high, each with a base 1 foot high and 3 feet square either bolted to solid rock or extended well into the ground to a good foundation. Immediately above the base, for a height of 6 inches, the monument has the form of the frustum of a pyramid, the base of which is the same size as the base of the monument, 3 feet square, and the top, 2 feet square. Above this is a frustum of another pyramid $2\frac{1}{2}$ feet high, 2 feet square at the base, and 1 foot square at the top; the monument then tapers in the form of a pyramid 6 inches high to the apex, in which a copper bolt is set. On the land side of the monument, in the first frustum above the base, is a bronze tablet bearing the inscription "TREATY OF 1908," and on the opposite side, facing the Boundary Line, a similar tablet bears the inscription "REFERENCE MARK." These tablets are attached to the monuments by suitable lugs or bolts inserted in the concrete.

WITNESS MARKS.

Some of the lighthouses used as reference marks are frame structures, liable to be destroyed or replaced. In order to provide for the recovery of the accurate location of these reference marks, in the event of their destruction or replacement, concrete witness marks were set and the distances and directions of the marks



FAIRFAX POINT REFERENCE MARK ON MORESBY ISLAND, CANADA.



ANGELES POINT REFERENCE MARK ON MAINLAND
UNITED STATES.

from the lighthouses accurately determined. On the United States shore the witness marks are square, triangular, or hexagonal in cross section and project 1 foot above the surface of the ground. On the Canadian shore they are square or circular in cross section or pyramidal in form and project 1 foot above the ground, and in the center of the top of each a copper bolt is set. The variation in design of the witness marks is for the purposes of identification.

THE CHART.

The Chart is on the scale of 1 : 200,000. On it are shown the Boundary Line laid down by the Commissioners in accordance with Article VIII of the Treaty of 1908, the boundary reference marks, and, by inserts, the detailed topography at the reference marks on the scale of 1 : 10,000.¹ The Chart bears the names of the United States and Canadian surveyors who were in charge of the field work and a statement signed by the Commissioners which reads as follows:

We certify that this chart is one of the four identical charts adopted under Article VIII of the Treaty between Great Britain and the United States signed at Washington April 11, 1908, and that we have marked thereon the Boundary Line as reestablished by the Commissioners designated above in accordance with the provisions of the said Article.

The four identical charts referred to in the certificate have been bound in separate covers and two of them, together with signed copies of this report, have been transmitted by each Commissioner to his Government, in accordance with the terms of the Treaty.

A limited number of copies of the Chart² have been prepared for distribution. These copies bear a certificate with facsimile signature of the Commissioners. The text of this certificate reads as follows:

We certify that this chart is a copy of one of the four identical charts adopted under Article VIII of the Treaty between Great Britain and the United States signed at Washington April 11, 1908, on which we marked the Boundary Line as reestablished by the Commissioners designated above, in accordance with the provisions of the said Article.

¹ In the preparation of the chart, the United States Coast and Geodetic Survey Chart No. 6300, which embodies the Admiralty Chart on which the Boundary Line was originally drawn under the Protocol of March 10, 1873, was used as a base.

² A copy of this chart has been placed in the pocket at the back of each copy of the Report prepared for distribution.

CONCLUSION.

The field work, as well as some work on the final chart, was done, and the office computations were made, under the direction of the original Commissioners, Mr. O. H. Tittmann for the United States, who resigned April 15, 1915, and Dr. W. F. King for Great Britain, who died April 23, 1916.

The work on the final chart was completed under the direction of Mr. E. C. Barnard, who was appointed Commissioner for the United States April 30, 1915, and Mr. J. J. McArthur, who was appointed Commissioner for Great Britain February 26, 1917. The chart was signed by them in quadruplicate at Washington, May 13, 1919.

In the division of the work of preparing the reports of the survey and demarcation of the Boundary under the different articles of the Treaty of 1908, the report upon the section of the Boundary under Article VIII was undertaken by the United States Commissioner, Mr. E. C. Barnard, and was in the hands of the printer when Mr. Barnard became seriously ill in December, 1920, and died February 6, 1921, before the printed copies were ready for the Commissioners' signatures.

Mr. E. Lester Jones was appointed Commissioner for the United States February 28, 1921.

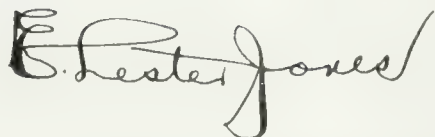
The work under Article VIII of the Treaty of 1908 is completed by the signing of this joint report by Commissioners J. J. McArthur and E. Lester Jones.

The Commissioners, on behalf of the former Commissioners and themselves, wish to express their appreciation of the conscientious and efficient services rendered by all engaged on the work, both in the field and office.

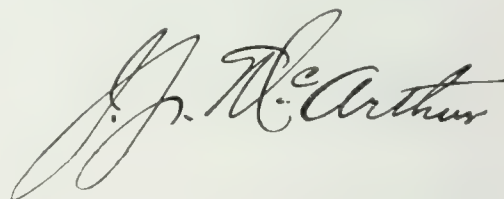
It is most gratifying to record that the preparation of the chart and report has been accomplished in a spirit of hearty cooperation and to state that the cordial relations that so long existed between the former Commissioners have been continued by their successors.

Attached hereto are appendices as follows:

- I. Explorations of the Pacific Coast Region between Latitudes 42° N. and 56° N. prior to 1818.
- II. Negotiations prior to the Treaty of 1908.
- III. Copies of Articles of Treaties, Award, and Protocol pertaining to this section of the Boundary prior to the Treaty of 1908.
- IV. Geographic positions and descriptions of the United States Coast and Geodetic Survey triangulation stations used in determining the geographic positions of the reference marks.



United States Commissioner.



His Britannic Majesty's Commissioner.

APPENDIX I.

EXPLORATIONS OF THE PACIFIC COAST REGION OF NORTH AMERICA BETWEEN LATITUDES 42° N. AND 56° N., PRIOR TO 1818.

EXPLORATIONS ALONG THE COAST.

It is probable that the first explorer to sight the Pacific coast between latitudes 42° and 56° N. was Bartolome Ferrelo. In March, 1543, heading an expedition which had been sent out from Navidad by the Viceroy of Mexico the year previous under orders "to examine the western coast of California as far north as possible and to seek for rich countries and passages toward the Atlantic," Ferrelo reached a point on the coast in latitude 43° N.

Next was Sir Francis Drake who, in June, 1579, while on his voyage around the world, sailing north from the Pacific coast of South America in the quest of a northern passage to the Atlantic Ocean, sighted the coast somewhere between latitudes 42° and 48°.

The Greek explorer, Juan de Fuca (otherwise known as Apostolus Valerianos) while searching for the "Strait of Anian" in 1592 followed northward along the coast from Acapulco, Mexico, came to a broad inlet (which he thought was between latitudes 47° and 48°), sailed up the inlet for 20 days, and then returned, believing he had discovered a passage to the Atlantic. Historians now generally agree that this inlet is what is known as the Straits of Juan de Fuca.

Then followed a period of more than a century and a half, during which the Pacific coast of North America seems to have been neglected by the civilized world.

In the year 1774, Juan Perez, sailing under the direction of the Viceroy of Mexico, sighted a promontory in about latitude 54° N., which he named Cape Santa Margareta (now called North Cape, on Queen Charlotte Island at the mouth of Dixon Entrance). Proceeding southward along the coast he entered a deep bay in about latitude 49° 30', where he remained for some time, trading with the natives. This bay he named San Lorenzo. Four years later it was visited by Capt. Cook and named by him Nootka Sound.

In 1775, Bruno Heceta, with Perez as ensign, in the ship *Santiago*, accompanied by the small schooner *Sonora* in command of Lieut. Juan Francisco de la Bodega y Quadra, having set out from Monterey under instructions to explore the coast as far north as latitude 65°, sighted land in the vicinity of latitude 48° 27', and examined the coast southward in search of the strait said to have been discovered by Juan de Fuca in 1592. Failing to find any opening in the coast, the vessels anchored close

to land, and the *Sonora* sent a boat ashore, with a crew of seven sailors, to obtain water. All seven were massacred by the natives, who then took to canoes and almost succeeded in boarding the schooner. The point near which the massacre occurred, shown on English maps as Greenville Point in latitude $47^{\circ} 20'$, was named Punta de Martires (Martyrs' Point). A small island situated a few miles farther north was called Isla de Dolores (Isle of Sorrows).

Shortly after the massacre the vessels were separated in a storm and Heceta headed his ship toward Monterey. On his way southward, he sighted land in about 50° , the present island of Vancouver, and passed by Port San Lorenzo, discovered the previous year by Perez. He failed to see the entrance to the Straits of Fuca, but sighted the coast near the forty-eighth parallel and, in latitude $46^{\circ} 17'$, noted an opening which he was unable to enter on account of the strong current, doubtless the mouth of the Columbia River. Heceta named it Assumption Inlet and the point on the north side of the inlet Cape San Roque, and that on the south side Cape Fondosa (Leafy Cape). He continued on to Monterey, arriving there August 30.

Bodega, on the other hand, continued northward in the schooner *Sonora* with the intention of reaching the sixty-fifth parallel, as per instructions. In latitude 56° he sighted, on what appeared to be a peninsula, a lofty snow-capped mountain which he called San Jacinto (now Mount Edgecomb). He named the bay on the north side of the peninsula Port Remedios (now known as the Bay of Islands), and the one on the other side Port Guadeloupe (now named Norfolk Sound), and landing on the shore of Port Remedios, took possession of the country with the usual formalities. Resuming his voyage, Bodega proceeded up the coast as far as 58° N., and then sailing southward, examining the coast, entered an extensive bay in latitude $55^{\circ} 30'$, which was named Port Bucareli. This bay is on the west side of the largest island of the group now known as Prince of Wales Archipelago. Continuing southward, he sighted the northeast extremity of Queen Charlotte Island, which had received from Perez in the preceding year the name of Cape Santa Margareta, and noted the wide passage separating Queen Charlotte Island from Prince of Wales Island, which had been called Entrada de Perez (now known as Dixon Entrance). Continuing southward, frequently catching glimpses of the coast, Bodega noted in latitude 47° N. the place where his men had been murdered by the natives two months before and, without noticing the opening visited by Heceta, next sighted land in $45^{\circ} 27'$.

The results of the explorations of Heceta and Bodega were considered highly important by the Spanish Government, and orders were sent to the Viceroy of Mexico to "have the discovery of the west coasts of America completed without delay." The construction of two ships for this expedition of discovery was immediately begun. The ships were completed late in 1778, and early the next year Bodega and Ignacio Arteago set sail for Port Bucareli. After an extended stay at that port, they continued northward, and in a few days sighted a very lofty snow-capped mountain, no doubt the present Mount St. Elias. In accordance with the

prevailing belief of those times, one of their charts showed a passage still farther to the north connecting with the Arctic Ocean. In the search for this passage, they entered a great bay (the present Prince William Sound) containing many islands, and on the western side of the largest island, which they named Isla de la Magdalena (now called Montague Island), they found a good harbor where they cast anchor and took possession of the region for the King of Spain. They gave the harbor the name of Port Santiago. The expedition soon returned to Mexico without having accomplished much in the way of new discoveries.

In 1776 Capt. Cook, who had returned from his second voyage of circumnavigation, was instructed by the British Government to proceed to the Pacific coast of North America in about latitude 45° , and then to sail northward along the coast to latitude 65° , where he was to begin "search for such rivers or inlets as might be of considerable extent and pointing toward Hudson's or Baffin's Bay." Accordingly, in July, 1776, he set sail from Plymouth in the *Resolution*, accompanied by Capt. Charles Clerke in the *Discovery*. After spending a year in examinations about Van Dieman's Land, New Zealand, the Friendly and Society Islands, in 1778 he sailed for the Pacific coast. The first glimpse he caught of land was in the vicinity of the forty-fourth parallel. He did not again see the coast until he sighted a promontory (48° N.), which he called Cape Flattery. As Heceta had done before him, Cook attempted to find the strait through which Juan de Fuca had sailed in 1592, but concluded from his observations that no opening in the coast existed in that vicinity. He cruised farther northward along the coast, entered a spacious bay in latitude $49^{\circ} 30'$, up which he sailed for about 10 miles, and anchored in a commodious harbor (Friendly Cove), where he refitted his vessels and traded with the natives. Cook named the bay King George's or Nootka Sound, being unaware that Perez had entered it four years before and had given it the name of Port San Lorenzo. Sailing northward from this bay, he sighted land in about 55° N., and made a careful examination of the coast from that point to 57° N., where he sighted a beautiful cone-shaped mountain, the lofty peak which Bodega had named Mount San Jacinto. Cook called it Mount Edgecomb, and by this name it has since been known. He also entered Port Remedios, to which he gave the name of Bay of Islands. In about latitude 59° , he sighted a high mountain back of a wide opening in the coast. He called the opening Cross Sound and the mountain Mount Fairweather. He also saw Mount St. Elias, and, after spending considerable time in the exploration of the coast north of latitude 55° N., returned to England.

It was not until 1786 that the Pacific coast of North America from latitude 40° to latitude $49^{\circ} 33'$ was again visited by vessels of a civilized nation. During that year La Perouse, a distinguished navigator, whom the French Government had sent out in 1785 to explore the Pacific coast north of latitude 55° , spent considerable time in the bay at the foot of Mount Fairweather. This bay he named Port des Francais, and from there sailed southward to what is now Queen Charlotte Island, the existence of which as an island he suspected but did not prove.

The only English vessels licensed to trade along the northwest coast of the American continent were those flying the flag of the East India Company, but some adventurous English captains did trade in this locality, sailing under the Portuguese flag. Among them were James Hanna, who visited Nootka and traded with the Indians in 1785, and James Hearne, who made a similar voyage in 1786.

About the same time, voyages were made to the North Pacific in search of furs by Captains Lowrie and Guise in two small vessels from Bombay, and by Captains Meares and Tipping in two smaller vessels from Calcutta, all under the flag of the East India Company. Lowrie and Guise went to Nootka Sound and thence northwest along the coast to Prince William Sound and returned. Meares and Tipping sailed to the Aleutian Islands and thence to Prince William Sound. Tipping and his vessel were probably lost. Meares spent the winter of 1786-87 in the Sound, where more than half of his crew died from want and scurvy.

Captains Portlock and Dixon, in command of the ships *King George* and *Queen Charlotte*, owned by the King George's Sound Company, and sailing under a license granted by the South Sea Company, visited the northwest coast in the years 1786 and 1787. Dixon sailed to the eastward, sighted Mount San Jacinto and visited the inlet on the south side of the mountain, which had been called Port Remedios, but to which he gave the name of Norfolk Sound. He also explored the entrance which bears his name and decided from his investigations that the land to the south was an island, to which he gave the name of Queen Charlotte's Island.

Before Portlock and Dixon quitted the northwest coast of America in 1787, they met two other vessels, the *Princess Royal*, commanded by Captain Duncan, and the *Prince of Wales*, under Captain Colnett, which had also been sent by the King George's Sound Company to prosecute the fur trade in the North Pacific. In the following year, Duncan ascertained definitely that Queen Charlotte Island was separated from the mainland, and explored the sea between that island and the continent, discovering the group of small islands named by him the Princess Royal's Archipelago. He later visited Nootka Sound.

In 1787, Capt. Berkeley, an Englishman, commanding the *Imperial Eagle*, sailing under the flag of the Austrian East India Company, found a wide entrance in the coast between latitudes 48° and 49° . This was doubtless the same inlet which the old Greek pilot, Juan de Fuca, reported having discovered in 1592. Berkeley did not attempt to explore the passage but sailed southward of Cape Flattery along that part of the coast which had not been visited by vessels since Cook's voyage. The crew of a boat which he sent ashore was murdered by the savages in the same manner and almost at the same spot where the Spaniards of Bodega's crew were massacred in 1775. On account of this massacre, Berkeley named the small island just north in latitude $47^{\circ} 35'$ Destruction Island, the Spanish name of which, given by Bodega, was *Isla de Dolores*.

In 1788, John Meares, a lieutenant in the British Navy, sailing in the *Felice* under the Portuguese flag from Macao, a Portuguese seaport near Canton, China, arrived

at Nootka Sound, where he began the construction of a small vessel, the *Northwest America*. While this boat was under construction, he decided to take part of his crew and go with the *Felice* on an exploring and trading trip. After first obtaining permission from the Indian Chief Maquinna, he had his crew build a house of sufficient size to accommodate the men who were to be engaged in the building of the vessel during his absence, and placed a cannon to command the cove and Nootka village.

Meares sailed southward from Nootka and entered the opening previously sighted and reported by Berkeley (in latitude $48^{\circ} 39'$). A boat which he sent up the inlet returned in a few days, its crew reporting that it had proceeded 30 leagues to a point where the inlet was believed to be some 15 leagues across, and that the crew had had a skirmish with the natives, in which some of his men were injured. It was Meares who gave the inlet the name "Straits of Juan de Fuca."

Meares then sailed southward along the coast in search of the opening shown upon the Spanish chart as River San Roque at about latitude 46° , which had been reported by Heceta in 1775. In the vicinity of this latitude he sighted a promontory and a small bay, but on attempting to enter the bay he encountered shoal water with breakers ahead of the ship, and failing to find any channel, was compelled to withdraw. He named the promontory Cape Disappointment and the bay Deception Bay, which was found to be in latitude $46^{\circ} 10' N$. Meares decided that no River San Roque existed as laid down on the Spanish charts, and returned to Nootka. On the way back he visited two large bays situated a little northwest of the entrance of the Juan de Fuca Strait, which were called by the natives *Clyoquot* and *Nitinat*. These bays he named Port Cox and Port Effingham.

Shortly after Meares returned to Nootka, the ship *Iphigenia*, commanded by Capt. Douglass, arrived from Cook's River loaded with furs. Plans were made to take the furs in the *Felice* to Macao and for the *Iphigenia* and the *Northwest America*, which had by this time been completed and launched, to cruise to the Sandwich Islands for the winter.

Before their departure, however, two American vessels arrived, the *Columbia*, in command of John Kendrick, and the *Washington*, in command of Robert Gray. These vessels had been fitted out in Boston and were sailing under the American flag with American papers. They left Boston together in the summer of 1787, but after reaching the Pacific Ocean were separated in a violent gale. The *Washington* continued northward toward Nootka Sound, the rendezvous agreed upon, and after sighting land several times in about latitude 46° , entered and anchored in a harbor which Gray thought was probably the mouth of the famous "River of the West." The historian Greenhow states that this harbor was probably the mouth of the Columbia River, whereas the historian Bancroft states that it was doubtless Tillamook Bay. At first the natives were very friendly, exchanging berries and skins for iron implements, but before the ship left, the men who were sent ashore, although received in the most friendly manner, were later attacked. One of the crew was

killed and others seriously wounded before the boat could regain the vessel, and the natives were only kept from boarding the ship by use of the swivel gun. Gray named this anchorage Murderers' Harbor and was glad to recross the bar at its entrance. From there he sailed northward along the coast, failing however to note the entrance to the Straits of Fuca, and arrived at Nootka Sound in September, where he was aided in entering the sound by boats from the *Felice* and *Iphigenia*.

Meantime the *Columbia*, which had been badly damaged in the storm which had separated the vessels, had put in for repairs at the harbor of the Isle San Juan de Fernandez, off the coast of Chile. Don Blas Gonzalez, the commandant of the Spanish garrison at that point, treated Kendrick very kindly and assisted him in every way in the refitting of his vessel. As soon as repairs were made, Kendrick sailed northward and arrived in Nootka a week behind Gray.

Shortly after the arrival of the *Columbia*, Meares left in the *Felice* for China, and the latter part of October the *Iphigenia* and the *Northwest America* sailed for the Sandwich Islands for the winter. The crews of the *Columbia* and *Washington* assisted in towing the *Iphigenia* and the *Northwest America* out of the harbor. The *Columbia* and *Washington* spent the winter at Nootka Harbor, Kendrick and Gray carrying on trade with the natives, whom they found to be very friendly.

The Spanish Government, upon receiving the report of the appearance in the Pacific of a trading vessel flying the American flag, and of the treatment accorded Kendrick by Commandant Gonzalez at Juan de Fernandez, became considerably alarmed and cashiered the unfortunate commandant for remissness.

It was from Russia, however, that the Spanish Government anticipated the greatest danger to its dominions on the Pacific side of America. From the narrative of Cook's expedition and other works then recently published enough had been learned of the commerce and establishments of that nation on the northwest coast of the Pacific to cause the Spaniards to seek first hand information. In 1787 the Viceroy of Mexico accordingly resolved to dispatch vessels to the North Pacific, and in the following year sent out two vessels, the *Princesca* under Martinez, and the schooner *San Carlos* under Gonzalo Haro, on an expedition of inquiry, to make an examination of the Russian establishments and other posts on the Pacific coast of America, and after the completion of this, to explore the coast southward to California, and particularly to seek places convenient for the establishment of Spanish colonies.

On his return, Martinez reported eight Russian establishments, all situated east of Prince William Sound; also that two Russian vessels had been sent to found a settlement at Nootka Sound. When the news of the proposed Russian projects reached Madrid, remonstrance against such encroachments was addressed by the Spanish sovereign to the Empress of Russia. Her Majesty replied that orders had been given her subjects to make no settlements in the country belonging to other nations.

Early in 1789, pursuant to the aggressive policy adopted by the Spanish Government, the Viceroy of Mexico again sent out Martinez and Haro, this time to take possession of Nootka in the name of the Spanish sovereign, and directed them "should any Russian or British vessels appear at Nootka, to receive them civilly, but at the same time to declare the paramount rights of His Catholic Majesty to that place and adjacent coasts."

Accordingly, having been provided with well-manned and well-equipped vessels, Martinez and Haro set sail from San Blas and arrived at Nootka Sound on May 5. They found the *Iphigenia* at anchor in Friendly Cove, and the *Columbia* at Mawhinna, a few miles farther up. The brig *Iphigenia* and the schooner *Northwest America* had arrived on April 20 from the Sandwich Islands where they had passed the winter, but the latter, after having secured some necessary equipment, had sailed on April 28 on a trading expedition and was therefore absent when Martinez arrived. Martinez immediately notified the commanders of the *Iphigenia* and *Columbia* that he intended to maintain possession of Nootka as a Spanish post and demanded that they show their papers.

The *Iphigenia* was badly in need of supplies and equipment, and her commander prevailed upon Martinez to furnish the necessary articles and to take in payment bills drawn on the Portuguese merchant, Juan Cavallo. But this constituted no concession on Martinez's part, for only a few days later he seized the vessel with her cargo, putting her Portuguese captain, Viana, as well as her supercargo, Douglass, under arrest, giving as excuse that their papers were defective. Nor were they released or the vessel and cargo restored to them until they had signed an agreement to pay the value thereof on demand, should the Viceroy of Mexico pronounce the seizure lawful. The *Iphigenia* lost no time in resuming her trading expedition and eventually arrived at Macao with a cargo of valuable furs. Her departure from Nootka was followed by the arrival of the *Northwest America* after a cruise along the coast, during which she had collected over two hundred sea otter skins. She was immediately seized by Martinez.

To return to Meares. On reaching Macao, he found that Juan Cavallo, whose name appeared on the papers of the *Felice* and *Iphigenia* as owner, had become bankrupt. Whereupon an arrangement was made between the real owners and the King George's Sound Company to unite their interests, in pursuance of which the *Felice* was sold, and the *Argonaut* purchased. The *Argonaut*, under Capt. Colnett, and the *Princess Royal*, under Capt. Hudson, having been provided with licenses from the East India and South Sea Companies, were thereupon dispatched to form a permanent settlement on the northwest coast of America, to be under the direction of Capt. Colnett. The *Princess Royal* arrived at Nootka just a few days behind the *Northwest America*.

On being informed by Capt. Hudson of Cavallo's bankruptcy, Martinez announced his determination to hold the *Northwest America* for the amount of the

bills drawn by the commander of the *Iphigenia*, and she was immediately equipped and sent out on a trading expedition under one of the mates of the *Columbia*.

Although the crew of the *Princess Royal*, who landed at Nootka on July 2, 1789, were treated with courtesy and respect, the crew of the *Argonaut*, which arrived at the entrance of the sound as the *Princess Royal* was leaving, were not so fortunate. Capt. Colnett had been informed by the officers of the *Northwest America* and *Columbia* of what had transpired at Friendly Cove; nevertheless, he was persuaded by Martinez to enter the sound, and later was invited on board Martinez's ship to exhibit his papers. During the interview in the cabin, Colnett informed Martinez that it was his intention to take possession of Nootka and erect a fort under the British flag. Martinez replied that this could not be done as the place was already occupied by Spanish forces in the name of His Catholic Majesty. The result was the arrest and confinement of Colnett and the seizure of the *Argonaut* and her cargo by the Spanish. After the cargo was transferred to the Spanish ships, the *Argonaut*, manned by a Spanish crew, with Colnett and his men on board as prisoners, sailed for San Blas, where she arrived on August 16. Near this place Colnett and his men were kept prisoners until the arrival of the commandant of the department of San Blas, Capt. Bodega y Quadra. By Bodega's orders, Colnett was treated with great kindness and taken to Mexico City, where he remained until he was set at liberty several months later. After his release he returned to San Blas where he refitted his ship and, with the survivors of his crew, sailed for Nootka to receive possession of the *Princess Royal*, which had been seized by the Spanish in 1789, but on his arrival at Nootka he found the place deserted and continued on to Macao, where he arrived in the latter part of 1790. The *Princess Royal* was later returned to him by Lieut. Quimper, under whose command she had been employed in the service of Spain for more than two years. On one of the trips which Quimper made with the *Princess Royal* he entered the Straits of Fuca and examined the shores for a distance of 100 miles.

The release of the *Argonaut* and *Princess Royal* by the Spanish was made under the condition that the ships were not to enter any place on the Spanish American coast for the purpose of settlement or trade with the natives. The officers and crew of the *Northwest America* and some of the men from the *Argonaut* and *Princess Royal* were carried to China as passengers on the *Columbia*, payment for their passage and wages being made out of the otter skins taken from the *Princess Royal* by Martinez.

Martinez remained at Nootka until November, 1789, when he departed for San Blas, pursuant to orders received from the Viceroy of Mexico.

During the spring and summer of 1789, Gray in the *Washington* was engaged in trading along the coast to the north and south of Nootka. It was on one of these trading expeditions that he made the first exploration of the whole east coast of Queen Charlotte Island. In a subsequent cruise, Gray entered the Straits of Fuca and sailed up the inlet 50 miles in an east-southeast direction, noting that the width of the strait at that distance from the Pacific was about 5 leagues.

On his way back to Nootka with the *Washington*, Gray met the *Columbia* which had just started for Canton, China, with the crew of the *Northwest America* aboard. Thereupon Gray took command of the *Columbia* and proceeded to China while Kendrick remained with the *Washington* on the Pacific coast. Gray landed the passengers and disposed of the furs in China, and then sailed for Boston, where he arrived August 10, 1790, having carried the flag of the United States for the first time around the world.

After parting with Gray, Kendrick sailed through the straits of Juan de Fuca, trading with the natives, and returned to the Pacific through a northern passage. He was thus the first to circumnavigate the Vancouver Island.

In the meantime, the seizure of the British ships by Martinez had become a matter of serious controversy between the Governments of Great Britain and Spain, although the ships taken as prizes had been restored and Spain had expressed a willingness to make reparation for the seizure. The matter was finally settled by a Convention, known as the Nootka Treaty, signed October, 1790, and which is as follows:

ARTICLE I. The buildings and tracts of land situated on the northwest coast of the continent of North America, or on the islands adjacent to that continent, of which the subjects of his Britannic majesty were dispossessed about the month of April, 1789, by a Spanish officer, shall be restored to the said British subjects.

ARTICLE II. A just reparation shall be made, according to the nature of the case, for all acts of violence or hostility which may have been committed subsequent to the month of April, 1789, by the subjects of either of the contracting parties against the subjects of the other; and, in case any of the said respective subjects shall, since the same period, have been forcibly dispossessed of their lands, buildings, vessels, merchandise, and other property, whatever, on the said continent, or on the seas and islands adjacent, they shall be reestablished in the possession thereof, or a just compensation shall be made to them for the losses which they have sustained.

ARTICLE III. In order to strengthen the bonds of friendship and to preserve in future a perfect harmony and good understanding, between the two contracting parties, it is agreed that their respective subjects shall not be disturbed or molested, either in navigating, or carrying on their fisheries, in the Pacific Ocean or in the South Seas, or in landing on the coasts of those seas in places not already occupied, for the purpose of carrying on their commerce with the natives of the country, or of making settlements there; the whole subject, nevertheless, to the restrictions specified in the three following articles.

ARTICLE IV. His Britannic majesty engages to take the most effectual measures to prevent the navigation and the fishery of his subjects in the Pacific Ocean or in the South Seas from being made a pretext for illicit trade with the Spanish settlements; and, with this view, it is moreover expressly stipulated that British subjects shall not navigate, or carry on their fishery, in the said seas, within the space of ten sea leagues from any part of the coasts already occupied by Spain.

ARTICLE V. As well in the places which are to be restored to the British subjects, by virtue of the first article, as in all other parts of the northwestern coasts of North America, or of the islands adjacent, situated to the north of the parts of the said coast already occupied by Spain, wherever the subjects of either of the two powers shall have made settlements since the month of April, 1789, or shall hereafter make any, the subjects of the other shall have free access, and shall carry on their trade without any disturbance or molestation.

ARTICLE VI. With respect to the eastern and western coasts of South America and to the islands adjacent, no settlement shall be formed hereafter by the respective subjects in such parts of those coasts as are situated to the south of those parts of the same coasts, and of the islands adjacent, which are already occupied by Spain; provided, that the said respective subjects shall retain the liberty of landing on the coasts and islands so situated for the purpose of their fishery and of erecting thereupon huts and other temporary buildings serving only for those purposes.

ARTICLE VII. In all cases of complaint or infraction of the articles of the present convention, the officers of either party, without permitting themselves to commit any violence or act of force, shall be bound to make an exact report of the affair and of its circumstances to their respective courts, who shall terminate such differences in an amicable manner.

Great Britain later appointed Capt. George Vancouver and Spain Capt. Bodega y Quadra as commissioners to carry out the second article of this Convention. They were to meet at Nootka and determine what land and buildings were to be restored to the British claimants. Vancouver sailed from England in January, 1791, in the *Discovery*, accompanied by the *Chatham* under the command of Lieut. Robert Broughton. Instructions for his conduct as commissioner followed him in the storeship *Dadalus*.

In addition to his duties as commissioner, Capt. George Vancouver was instructed to examine the shores of the American continent on the Pacific Ocean between the thirty-fifth and sixtieth parallels of latitude, to ascertain the extent of settlements north of these limits and to search for a passage which might serve as a channel for commercial intercourse between British settlements on the Pacific and on the Atlantic coasts.

In September, 1790, four United States ships sailed from Boston and one from New York for trade on the Pacific Ocean. Among them were the brig *Hope*, in command of Ingraham, and the *Columbia*, in command of Gray. Gray arrived at Olyquot, near the entrance of the Straits of Fuca, in June, 1791, and proceeded thence to the east coast of Queen Charlotte Island, where he remained until September, examining the coasts of the island and mainland between latitudes 54° and 56° , and trading with the natives. He entered an inlet in latitude $54^{\circ} 33'$ (probably the present Portland Canal), which he explored for a hundred miles to the northeast without reaching its termination. Gray returned to Olyquot and built a fortified habitation which he called Fort Defiance, in which he lived until the following spring. During the winter he built a small vessel, the *Adventure*, which in April sailed to Queen Charlotte Sound under command of Haswell, first mate of the *Columbia*.

Vancouver and Broughton reached Cape Mendocino on the Pacific coast in April, 1792, and cruised northward, examining the coast for any bays or inlets. They observed the discoloration of the water in Deception Bay, but as Vancouver did not consider the opening worthy of attention, and as it seemed impossible to enter on account of shoal water, they continued northward. On April 29 they met the *Columbia* in command of Gray, who reported having been off the mouth of a

river in latitude $46^{\circ} 10'$, but that the current and breakers had prevented his entering it. This was undoubtedly the same entrance that Vancouver and Broughton had observed a few days before.

Gray, who had sailed from Fort Defiance early in April, sighted an opening in latitude $46^{\circ} 58'$, which he entered and found to be a bay well sheltered from the sea by long sand bars and spits. He named this bay Bull Finch Harbor, and remained there three days trading with the natives. Sailing southward, he soon came in sight of another opening, and upon crossing the bar between breakers, on May 11, 1792, entered a large fresh-water river, which he named the Columbia in honor of his ship. In the course of the next few days he proceeded up the river some 20 miles, and on May 20 recrossed the bar into the Pacific.

From the mouth of the Columbia Gray sailed to the east coast of Queen Charlotte Island, where his ship struck and was badly damaged. After some difficulty he succeeded in reaching Nootka, where the damage was repaired. While at Nootka he communicated his discovery of the Columbia River to Capt. Ingraham, who had arrived a few days before from Boston, and to Capt. Quadra, who had been put in command of the Spanish forces at Nootka. He furnished the Spanish commander with a chart of Bull Finch Harbor and the mouth of the Columbia.

After parting with Gray, Vancouver and Broughton entered the Strait of Juan de Fuca and sailed eastward for a hundred miles to its extremity in that direction, where they entered a harbor which they called Port Discovery. A little beyond this harbor they discovered another opening in the coast with a southern branch extending for over a hundred miles from the Strait. They named the opening Admiralty Inlet, the western branch Hood Canal, the southern branch Puget Sound, and the eastern branch Possession Sound, and explored all of them throughout their entire lengths.

On returning to the Strait of Fuca, Vancouver and Broughton examined several other openings but found them to be bays of small extent, or channels between islands. While proceeding through one of these channels, which opened immediately opposite the entrance of Admiralty Inlet and extended northwestward, they unexpectedly encountered the schooners *Satil* and *Mexicana*, commanded by Galleano and Valdez, who had been sent out from San Blas early in the spring to explore the Strait of Fuca and had advanced thus far along the northern shore of the strait. The commanders exchanged information and continued investigations jointly for three weeks, during which time they surveyed the shores of the great gulf, called by the Spaniards Canal del Rosario, and by the English Gulf of Georgia, which extended as far north as latitude 50° . The Spanish ships being unable to keep up, the English parted with them and entered a passage which they named Johnston Strait, leading from the northwest extremity of the Gulf of Georgia, and on August 10 emerged into the Pacific at Queen Charlotte Sound, from which they sailed southward 100 miles and arrived at Nootka September 4. From their examination of the eastern shore of the pas-

sages through which they sailed, Vancouver and Broughton were convinced that the continent of America extended uninterruptedly northward to at least 52° N.

Quadra and Vancouver together compared the notes and charts of the voyages by the Spanish and English through the Straits of Fuca, and agreed to call the great island around which the voyagers had sailed the Island of Quadra and Vancouver. Vancouver's survey of the Strait of Fuca was most thorough in every way.

While at Nootka, Vancouver received instructions from the British Government for his conduct as Commissioner under the Nootka treaty, and as Quadra had also received similar instructions from the Spanish Government, consideration of the manner in which the terms of the treaty were to be carried out was taken up by them. Failing to agree upon what were the limits of the land which was to be returned to Great Britain, they decided to leave the matter in abeyance and to request further instructions from their respective Governments.

Vancouver then went to Bull Finch Harbor and the Columbia River, having decided to make a thorough examination of both the bay and the river. His ship, however, was unable to cross the bar, at the entrance of the Columbia, but Broughton, who succeeded in crossing with the *Chatham*, went some distance up the river and returned. They then cruised southward along the coast to Monterey and wintered in the Sandwich Islands.

The next year (1793) Vancouver returned to Nootka and spent considerable time in the examination of the shore and islands from the north entrance of the Strait of Fuca to latitude 54° N., then sailing south, he carefully examined the coast as far as San Diego (33° N.).

After again wintering in the Sandwich Islands, Vancouver returned in the spring of 1794 to the northwest coast and made a thorough examination of every port not previously visited, from the Unalaska Peninsula to Queen Charlotte Sound. He began at Cook's River (which was found to be really an inlet), and proceeded to Prince William Sound and thence along the coast, passing the bases of Mount St. Elias and Mount Fairweather, to Cross Sound in latitude 58° N. From Cross Sound, Vancouver passed through a labyrinth of channels, some between islands and some extending far inland. Having examined all the inlets throughout their entire lengths, especially those extending in a northeasterly direction, and having connected them with the surveys of the preceding year, Vancouver concluded that his task was accomplished and returned to England.

Russia made a number of explorations of the Pacific coast of North America prior to 1818, but all of her important expeditions were carried on north of the 56th parallel.

EXPLORATIONS OF THE INTERIOR.

In 1788, the North-West Company, which was owned and operated by British citizens, established Fort Chipewyn on the southwest shore of Athabasca Lake, or Lake of the Hills, in latitude 59° N., being about midway between the Atlantic and

the Pacific. In 1792, a party in charge of Alexander Mackenzie, left Fort Chipewyn, ascended Peace River, and wintered at the foothills of the Rocky Mountains. Starting early in June the following year, the party ascended the Peace River to its source, within one-half mile of which they found another river called Tauchotee-Teese, down which they floated for 250 miles. Then abandoning their canoes and traveling westward about 200 miles they reached the Pacific Ocean on July 22, 1793, at the mouth of an inlet in latitude $52^{\circ} 20'$, which had a few weeks previously been surveyed by Vancouver and had been named Cascade Canal. Having thus accomplished a passage across the American continent, Mackenzie's party retraced their steps to Fort Chipewyn. This expedition proved beyond all doubt that the American continent extended to the Pacific Ocean uninterrupted by any water passage as far north as $52^{\circ} 20'$. The River Tauchotee-Teese was supposed to be the upper part of the Columbia River until 1812, when it was traced to its mouth. It has since been known as the Fraser River.

By the Louisiana Purchase in 1803, the western boundary of the United States was extended to the highlands separating the waters of the Mississippi River from those flowing into the Pacific Ocean and Gulf of Mexico. For the purpose of exploring this territory and finding a practicable route to the Pacific, Captains Merriweather Lewis and William Clarke were commissioned by President Jefferson in 1803 "to explore the River Missouri and its principal branches to their sources, and then to seek and trace to its termination in the Pacific some stream which might offer the most direct and practicable water communication across the continent for the purpose of commerce."

Due to delay in the formal transfer of the territory acquired by the Louisiana Purchase, Lewis and Clarke did not start on their expedition until May, 1804, when with a party of 28 men they began the ascent of the Missouri. By October they had covered 1,600 miles. They spent the winter in the Mandan country, and resumed the ascent of the river in April of the following year. Passing the mouth of the Yellowstone, the party continued up the main stream and reached the Great Falls of the Missouri in July. After passing these falls, they found that the river divided into several branches. They ascended the largest branch, which they called the Jefferson, to its source in latitude 44° N., 3,000 miles from the entrance of the Missouri into the Mississippi. The party crossed the summit of the Rocky Mountains, and journeying northwestward nearly 400 miles, after crossing several streams, reached a stream called by the Indians Kooskookee, now known as the Clearwater, in latitude $43^{\circ} 44'$, which the Indians said could be descended in canoes for a great distance. Three days' travel down this river brought them to what proved to be the principal southern branch of the Columbia River, which was named Lewis River, now known as the Snake River, and seven days' descent of this river brought them to the junction of the larger northern branch, which they named Clarke Fork in honor of Capt. Clarke. Continuing down the main

stream of the Columbia, the party reached the mouth of the river and landed at Cape Disappointment on the Pacific coast on November 15, 1805.

The party passed the winter at what they called Fort Clatsop, a dwelling constructed by them on the south bank near the mouth of the river, and in March, 1806, started on the return journey up the Columbia, carefully examining the shores of the river as they ascended. They discovered the mouth of a large stream coming in from the north, called by the Indians the Cowlitz, and 30 miles above this they found a much larger branch entering the Columbia from the south, supposed to be the Multanolah, known now as the Willamette. They continued the ascent to the point on the Kooskookee where they had embarked the year previous, and from there traveled overland eastward to Clarke's Fork (now known as Bitterroot River) in latitude 47° , at which point the party divided. Capt. Lewis with a number of men went northward down the Bitterroot River a short distance to the mouth of an eastern fork, ascended that fork and then crossed the divide, striking the Missouri River just above Great Falls. From this point Lewis's party made a trip to the headwaters of the Marius River and returned to its mouth and then descended the Missouri to the mouth of the Yellowstone. Clarke, with his section of the party, ascended the valley of the Bitterroot River, and by crossing a low divide near its head, reached the point at which the expedition on its way westward the previous season had left the Jefferson River, and found the cache and canoes undisturbed. They continued down the Jefferson River to the mouth of the Gallatin River, crossed a divide to the Yellowstone and descended it to its mouth, where they were soon joined by Lewis's party, and together descended the Missouri River to St. Louis, where they arrived on September 23, 1806.

In the meantime, the British fur-trading companies were pushing westward. As a result of a conference at the headquarters of the North-West Company at Fort William in 1805, the task of extending the operations of the company into the territory discovered by Mackenzie was assigned to Simon Fraser. Late in that year Fraser ascended the Peace River from Lake Athabasca and built the Rocky Mountain House at the eastern extremity of the portage across the Rocky Mountains.

In the year 1806, another expedition under Simon Fraser and John Stuart followed Mackenzie's route to where the Stuart River empties into the Fraser, and then ascended the Fraser to the present Stuart Lake, where they erected a fort which was later called Fort James. They also started the erection of buildings (Fort Fraser) on what is now called Fraser Lake. In the following year they built Fort George on the Fraser River at the mouth of the Stuart. Leaving Fort George on May 28, 1808, with 21 men, they descended the Fraser River in canoes to tide-water, arriving there July 1. They were prevented from reaching the sea by the hostility of the natives, and returned to Fort George the following August. This expedition proved that the river which Fraser descended and which bears his name was not the Columbia.

In 1805 a party of the North-West Company under La Roque was dispatched eastward to establish trading posts on the Columbia, but proceeded no farther than the Mandan Indian village on the Missouri. Later, other trading posts were established in this country, which in 1808 received the name of New Caledonia.

In 1808 a United States association, called the Missouri Fur Company, established posts in the upper Mississippi and Missouri country and beyond the Rocky Mountains. Mr. Henry, of this company, founded a trading post on a branch of the Lewis River, the first to be established on the waters of the Columbia. This post was abandoned in 1810 on account of Indian depredations and difficulty of getting supplies.

In 1810 Capt. Smith, of the American ship *Albatross*, built a house and planted a garden at Oak Point on the south bank of the Columbia River, 40 miles from its mouth, but gave them up the same year.

In 1810 John Jacob Astor, a United States citizen, formed the Pacific Fur Company for the prosecution of the fur trade in the central and northwestern parts of the continent, and sent out a party from New York in the ship *Tonquin* to establish a trading post on the Columbia River near its mouth, and a little later dispatched another party overland for the same purpose. The party on the ship *Tonquin* entered the mouth of the Columbia in March, 1811, landed on the south bank of the river about 10 miles from its mouth at the point named Fort George by Broughton in 1792, and erected a trading post which they called Astoria.

The following July this post was visited by Mr. David Thompson, of the North-West Company, who the preceding summer had been sent to found a post at the same place. His party had descended the northern branch of the Columbia, the first white men to come down this tributary. In 1810 posts had been founded by that company on the Kootenai and Flathead Rivers. A party of Astorians accompanied Mr. Thompson on his return up the Columbia and established a trading post at the mouth of the Okonogan on the north branch of the Columbia, 600 miles above the junction of the north and south branches. In 1812 the Astorians established a trading post on the Spokane River, a stream entering the northern branch of the Columbia about 650 miles from the ocean.

The detachment sent overland to Astoria did not arrive there until January, 1812, having lost several of the party in attempting to descend the headwaters of the Lewis River in canoes.

In 1813 the flourishing post of Astoria learned of the declaration of war against Great Britain, and that ships from the United States were therefore not expected to arrive. A short time after Astoria received the news, the post was visited by two representatives of the North-West Company and 16 men, who brought accounts of Great Britain's early successes in the war. The officers of the Pacific Fur Company at Astoria decided that unless help came in three months the company would be dissolved. Accordingly, in October, 1813, as no help had arrived, and as

the post was likely to be captured by the British at any time, an agreement was made with the representatives of the North-West Company by which all the establishments, furs, and stock of the Pacific Fur Company in the Columbia River valley were sold to the North-West Company for \$58,000. After this agreement had been signed, and while the process of transfer was going on, the British warship *Raccoon*, which had been dispatched to capture this post, appeared at the mouth of the Columbia River, and Capt. Black demanded of the Pacific Fur Company the surrender of the post. This was formally complied with, after which Capt. Black learned that the contents of the post had already become the property of British subjects by purchase. The flag of the United States was hauled down and the flag of Great Britain raised, with formalities, and the name of the post changed back to Fort George.

By the Treaty of Ghent, which terminated the war of 1812, it was stipulated that all territory, places, and possessions whatsoever taken by either party from the other during the war, or which may have been taken after the signing of this treaty, excepting certain places in the Bay of Fundy, should be restored without delay.

After some controversy, Astoria was restored to the United States on October 6, 1818, when Capt. Hickey, on the part of Great Britain, and Mr. Prevost, on the part of the United States, acting as commissioners for their respective Governments, met in Astoria (Fort George) for that purpose. The British flag was formally lowered and the United States flag hoisted and saluted by the guns of the British ship *Blossom*.¹

¹ The principal authorities consulted in the preparation of the foregoing sketch were Greenhow's "Oregon and California," Bancroft's "History of the Northwest Coast," and Vol. X of The Makers of Canada Series, by R. H. Coats and R. E. Gosnell.

APPENDIX II.

NEGOTIATIONS PRIOR TO THE TREATY OF 1908.

The region between the forty-second parallel of north latitude and latitude 54° 40', extending from the Pacific Ocean to the Rocky Mountains, known in the early days as the Oregon Country, was originally claimed by Great Britain, the United States, Spain, and Russia on the ground of discovery, exploration, or settlement. Subsequently, Spain and Russia, by treaties with the United States, renounced their claims. Great Britain and the United States, however, were unwilling to make any concessions to each other; each continued to claim the entire territory.

The United States claim was based on:

(1) The discovery in 1792 of the Columbia River by Robert Gray, who entered and explored the river for 23 miles, giving it the name of his ship.

(2) The expedition of Lewis and Clarke in 1803-1806 from St. Louis to the mouth of the Columbia, via the Mississippi and Missouri Rivers, and thence across the continental divide to the headwaters of the Columbia, thence down the Clearwater, Snake, and Columbia Rivers to the Pacific Ocean.

(3) The establishment in 1811 by the Pacific Fur Company (organized by John Jacob Astor, an American merchant) of a fur-trading settlement near the mouth of the Columbia River, which was named Astoria, and although captured by the British during the War of 1812, was restored to the United States on the conclusion of peace.

The British claim was based on:

(1) The exploration by Capt. Cook in 1778 of the Pacific coast from latitude 43° north to 70° north.

(2) The establishment by British merchants in 1788 of a trading post at Nootka Sound, which, although seized by Spain in 1789, together with two British ships that were anchored there, was restored by the Treaty of 1790—the Treaty also recognizing Great Britain's fishing and trading rights in the Pacific.

(3) The explorations by Vancouver in 1792-1794 of a part of the coast and waters of Juan de Fuca Straits and the Gulf of Georgia, and the explorations by Alexander Mackenzie and settlements by the North-West Company during the same period in the country north of the Columbia River.

As no partition of the Oregon territory could be agreed upon, it was stipulated by Article III of the Treaty concluded between the United States and Great Britain on October 20, 1818, that the entire territory in dispute should be free and open to

both parties for a period of ten years, without prejudice to the claim of sovereignty of either.

During this period the United States claim to the territory was strengthened by the Treaty with Spain, concluded February 22, 1819, and by Article III of the Convention with Russia, concluded April 17, 1824. Spain ceded all her rights, claims, and pretensions to the territory on the Pacific Ocean north of the forty-second parallel of north latitude to the United States, and Russia renounced all her claims to territory south of $54^{\circ} 40'$.

Throughout this period of "free and joint occupancy" the British companies carried on a vigorous fur trade in the territory. In 1824 the Hudson's Bay Company, which three years previously had absorbed the North-West Company, erected Fort Vancouver on the lower Columbia, near the mouth of the Willamette, which was for many years the center of trade in the northwest country.

As this ten-year period was drawing to a close without a settlement having been made, on October 28, 1827, a convention was concluded between the United States and Great Britain, providing that all the conditions of Article III of the Treaty signed October 20, 1818, should be indefinitely extended and continued in force, but with the provision that this convention might be annulled and abrogated by either of the contracting parties on 12 months' notice.

In the course of the next few years the fertility of the Columbia River valley and the wealth of the forests became known in the East, and a stream of American immigration set in. By 1841 the Americans in Oregon had reached such numbers as to make some form of civil government desirable, and two years later a provisional government was organized. The American immigration continued to increase yearly until it reached 3,000 in 1845, and a final settlement of the boundary question became imperative.

This was accomplished by the treaty between the United States and Great Britain, concluded on June 15, 1846, by which the Governments agreed to the extension of the Boundary Line along the forty-ninth parallel of north latitude from the eastern slope of the Rocky Mountains, the western terminus of the Boundary as defined by Article II of the Treaty of 1818, "to the middle of the channel separating the continent from Vancouver's Island, and thence southerly along the middle of said channel and San Juan de Fuca Straits to the Pacific Ocean."

The Treaty defined the Boundary Line from the eastern slope of the Rocky Mountains to the middle of Georgia Strait, but failed to designate which of the three channels it should follow through the islands to the Pacific Ocean. The Commissioners, Mr. Archibald Campbell, on the part of the United States, and Capt. James C. Prevost, R. N., on the part of Great Britain, who were appointed to lay down the Boundary Line from the western terminus of the land boundary to the Pacific Ocean, disagreed as to its location, the United States Commissioner contending that it should pass through the Canal de Haro and the British Commissioner that it should pass through the Rosario Straits. This dispute continued

until 1871, when the two Governments agreed to submit the matter to Emperor William of Germany for arbitration, his decision to be final and binding on both parties. Emperor William decided that, in accordance with the true interpretation of the Treaty, the Canal de Haro was the channel through which the Boundary Line should pass.

The Boundary Line from the western terminus of the land boundary to the Pacific Ocean was defined and marked on Admiralty charts by the protocol of a conference in Washington, March 10, 1873, but no permanent marks or ranges were established. By this protocol the Boundary passing between Saturna and Patos Islands was drawn and defined as a curved line. By Article VIII of the Treaty of 1908, this curved portion was replaced by straight lines, thereby making the Boundary Line through Georgia, Haro, and Juan de Fuca Straits, throughout its entire length, a series of connecting straight lines, defined by courses and distances.

APPENDIX III.

ARTICLES OF TREATIES, AWARD, AND PROTOCOL PERTAINING TO THE BOUNDARY FROM THE FORTY-NINTH PARALLEL TO PACIFIC OCEAN, PRIOR TO THE TREATY OF 1908.

ARTICLE I OF THE TREATY ESTABLISHING BOUNDARY WEST OF THE ROCKY MOUNTAINS.

(Concluded June 15, 1846; ratification advised by the Senate June 18, 1846; ratified by the President June 19, 1846; ratifications exchanged July 17, 1846; proclaimed August 5, 1846.)

From the point on the forty-ninth parallel of north latitude, where the boundary laid down in existing treaties and conventions between the United States and Great Britain terminates, the line of boundary between the territories of the United States and those of Her Britannic Majesty shall be continued westward along the said forty-ninth parallel of north latitude to the middle of the channel which separates the continent from Vancouver's Island; and thence southerly through the middle of the said channel, and of Fuca's Straits, to the Pacific Ocean: Provided, however, that the navigation of the whole of the said channel and straits, south of the forty-ninth parallel of north latitude, remain free and open to both parties.

ARTICLES XXXIV-XLII OF THE TREATY OF WASHINGTON.

(Concluded May 8, 1871; ratification advised by the Senate May 24, 1871; ratified by the President May 25, 1871; ratifications exchanged June 17, 1871; proclaimed July 4, 1871.)

ARTICLE XXXIV.

Whereas it was stipulated by Article I of the treaty concluded at Washington on the 15th of June, 1846, between the United States and Her Britannic Majesty, that the line of boundary between the territories of the United States and those of Her Britannic Majesty, from the point of the forty-ninth parallel of north latitude up to which it had already been ascertained, should be continued westward along the said parallel of north latitude "to the middle of the channel which separates the continent from Vancouver's Island, and thence southerly, through the middle of the said channel and of Fuca Straits, to the Pacific Ocean;" and whereas the Commissioners appointed by the two high contracting parties to determine that portion of the boundary which runs southerly through the middle of the channel aforesaid,

were unable to agree upon the same; and whereas the Government of Her Britannic Majesty claims that such boundary line should, under the terms of the treaty above recited, be run through the Rosario Straits, and the Government of the United States claims that it should be run through the Canal de Haro, it is agreed that the respective claims of the Government of the United States and of the Government of Her Britannic Majesty shall be submitted to the arbitration and award of His Majesty the Emperor of Germany, who, having regard to the above-mentioned article of the said treaty, shall decide thereupon, finally and without appeal, which of those claims is most in accordance with the true interpretation of the treaty of June 15, 1846.

ARTICLE XXXV.

The award of His Majesty the Emperor of Germany shall be considered as absolutely final and conclusive; and full effect shall be given to such award without any objection, evasion, or delay whatsoever. Such decision shall be given in writing and dated; it shall be in whatsoever form His Majesty may choose to adopt; it shall be delivered to the Representatives or other public Agents of the United States and of Great Britain, respectively, who may be actually at Berlin, and shall be considered as operative from the day of the date of the delivery thereof.

ARTICLE XXXVI.

The written or printed case of each of the two parties, accompanied by the evidence offered in support of the same, shall be laid before His Majesty the Emperor of Germany within six months from the date of the exchange of the ratifications of this treaty, and a copy of such case and evidence shall be communicated by each party to the other, through their respective Representatives at Berlin.

The high contracting parties may include in the evidence to be considered by the Arbitrator such documents, official correspondence, and other official or public statements bearing on the subject of the reference as they may consider necessary to the support of their respective cases.

After the written or printed case shall have been communicated by each party to the other, each party shall have the power of drawing up and laying before the Arbitrator a second and definitive statement, if it think fit to do so, in reply to the case of the other party so communicated, which definite statement shall be so laid before the Arbitrator, and also be mutually communicated in the same manner as aforesaid, by each party to the other, within six months from the date of laying the first statement of the case before the Arbitrator.

ARTICLE XXXVII.

If, in the case submitted to the Arbitrator, either party shall specify or allude to any report or document in its own exclusive possession without annexing a copy,

such party shall be bound, if the other party thinks proper to apply for it, to furnish that party with a copy thereof, and either party may call upon the other, through the Arbitrator, to produce the originals or certified copies of any papers adduced as evidence, giving in each instance such reasonable notice as the Arbitrator may require. And if the Arbitrator should desire further elucidation or evidence with regard to any point contained in the statements laid before him, he shall be at liberty to require it from either party, and he shall be at liberty to hear one Counsel or Agent for each party, in relation to any matter, and at such time, and in such manner, as he may think fit.

ARTICLE XXXVIII.

The Representatives or other public Agents of the United States and of Great Britain at Berlin, respectively, shall be considered as the Agents of their respective Governments to conduct their cases before the Arbitrator, who shall be requested to address all his communications and give all his notices to such Representatives or other public Agents, who shall represent their respective Governments generally in all matters connected with the arbitration.

ARTICLE XXXIX.

It shall be competent to the Arbitrator to proceed in the said arbitration, and all matters relating thereto, as and when he shall see fit, either in person, or by a person or persons named by him for that purpose, either in the presence or absence of either or both Agents, and either orally, or by written discussion or otherwise.

ARTICLE XL.

The Arbitrator may, if he think fit, appoint a Secretary or Clerk for the purposes of the proposed arbitration, at such rate of remuneration as he shall think proper. This, and all other expenses of and connected with the said arbitration, shall be provided for as hereinafter stipulated.

ARTICLE XLI.

The Arbitrator shall be requested to deliver, together with his award, an account of all the costs and expenses which he may have been put to, in relation to this matter, which shall forthwith be repaid by the two Governments in equal moieties.

ARTICLE XLII.

The Arbitrator shall be requested to give his award in writing as early as convenient after the whole case on each side shall have been laid before him, and to deliver one copy thereof to each of the said Agents.

AWARD OF THE EMPEROR OF GERMANY UNDER THE XXXIVTH ARTICLE OF THE
TREATY OF MAY 8, 1871, GIVING THE ISLAND OF SAN JUAN TO THE UNITED
STATES.

[Translation.]

We, William, by the grace of God, German Emperor, King of Prussia, &c., &c., &c.

After examination of the Treaty concluded at Washington on the 6th of May, 1871, between the Governments of Her Britannic Majesty and of the United States of America, according to which the said Governments have submitted to Our Arbitrament the question at issue between them, whether the boundary-line which, according to the Treaty of Washington of June 15, 1846, after being carried westward along the forty-ninth parallel of northern latitude to the middle of the channel which separates the continent from Vancouver's Island is thence to be drawn southerly through the middle of the said channel and of the Fuca Straits to the Pacific Ocean, should be drawn through the Rosario Channel as the Government of Her Britannic Majesty claims, or through the Haro Channel, as the Government of the United States claims; to the end that We may finally and without appeal decide which of these claims is most in accordance with the true interpretation of the treaty of June 15, 1846.

After hearing the report made to Us by the experts and jurists summoned by Us upon the contents of the Interchanged memorials and their appendices -

Have decreed the following award:

Most in accordance with the true interpretations of the Treaty concluded on the 15th of June, 1846, between the Governments of Her Britannic Majesty and of the United States of America, is the claim of the Government of the United States that the boundary-line between the territories of Her Britannic Majesty and the United States should be drawn through the Haro Channel.

Authenticated by Our Autographic Signature and the impression of the imperial great seal.

Given at Berlin, October the 21st, 1872.

[SEAL.]

WILLIAM.

PROTOCOL OF A CONFERENCE AT WASHINGTON, MARCH 10, 1873, RESPECTING THE
NORTHWEST WATER-BOUNDARY.

Whereas it was provided by the first article of the treaty between the United States of America and Great Britain, signed at Washington on the 15th of June, 1846, as follows:

ARTICLE I.

From the point on the 49th Parallel of North Latitude, where the boundary laid down in existing treaties and conventions between the United States and Great Britain terminates, the line of Boundary between the territories of the United States and those of Her Britannic Majesty shall be continued westward along the said 49th parallel of North Latitude, to the

middle of the channel which separates the Continent from Vancouver's Island; and thence southerly through the middle of the said channel, and of Fuca's Straits, to the Pacific Ocean; Provided, however, That the navigation of the whole of the said channel and straits, south of the 49th parallel of North Latitude, remain free and open to both parties.

And whereas it was provided by the XXXIVth Article of the Treaty between the United States of America and Great Britain, signed at Washington on the 8th of May, 1871, as follows:

ARTICLE XXXIV.

Whereas it was stipulated by Article I of the Treaty concluded at Washington on the 15th of June, 1846, between the United States and Her Britannic Majesty, that the line of boundary between the territories of the United States and those of Her Britannic Majesty, from the point on the 49th parallel of North Latitude up to which it had already been ascertained, should be continued westward along the said parallel of North Latitude to the middle of the channel which separates the Continent from Vancouver's Island, and thence southerly, through the middle of the said channel and of Fuca's Straits to the Pacific Ocean—and whereas the commissioners appointed by the two high contracting parties to determine that portion of the Boundary which runs southerly through the middle of the channel aforesaid were unable to agree upon the same; and whereas the Government of Her Britannic Majesty claims that such boundary line should under the terms of the Treaty above recited, be run through the Rosario Straits, and the Government of the United States claims that it should be run through the Canal de Haro, it is agreed that the respective claims of the Government of the United States, and of the Government of Her Britannic Majesty, shall be submitted to the arbitration and award of His Majesty the Emperor of Germany, who having regard to the above-mentioned article of the said Treaty, shall decide thereupon, finally and without appeal, which of those claims is most in accordance with the the true interpretation of the treaty of June 15th, 1846.

And whereas His Majesty, the Emperor of Germany has, by his award dated the 21st of October, 1872, decided that

Mit der richtigen Auslegung des zwischen den Regierungen Ihrer Britischen Majestät und der Vereinigten Staaten von Amerika geschlossenen Vertrages de dato Washington den 15 Juni 1846, steht der Auspruch der Regierung der Vereinigten Staaten am meisten im Einklange, dass die Grenzlinie zwischen den Gebieten Ihrer Britischen Majestät und den Vereinigten Staaten durch den Haro-Kanal gezogen warde.

The undersigned, Hamilton Fish, Secretary of State of the United States, and the Right Honourable Sir Edward Thornton, one of Her Majesty's Most Honourable Privy Council, Knight Commander of the Most Honourable Order of the Bath, Her Britannic Majesty's Envoy Extraordinary and Minister Plenipotentiary to the United States of America, and Rear-Admiral James Charles Prevost, Commissioner of Her Britannic Majesty, in respect of the boundary aforesaid, duly authorized by their respective Governments to trace out and mark on charts prepared for that purpose the line of Boundary in conformity with the award of His Majesty, the Emperor of Germany, and to complete the determination of so much of the Boundary line between the territory of the United States and the possessions of Great Britain as was left uncompleted by the commissioners heretofore appointed to carry into effect the First Article of the Treaty of 15th June, 1846, have met together at

Washington and have traced out and marked the said Boundary line on four charts severally entitled, "North America, West Coast, Strait of Juan de Fuca, and the channels between the Continent and Vancouver Id., showing the Boundary line between British and American Possessions, from the admiralty surveys by Captains H. Kellett, R. N., 1847, and G. H. Richards, R. N., 1858-1862," and having on examination agreed that the lines so traced out and marked on the respective charts are identical, they have severally signed the said charts on behalf of their respective Governments, two copies thereof to be retained by the Government of the United States and two copies thereof to be retained by the Government of Her Britannic Majesty, to serve with the "definition of the Boundary line," attached hereto, showing the general bearings of the line of Boundary as laid down on the charts, as a perpetual record of agreement between the two Governments in the matter of the line of Boundary between their respective dominions under the First Article of the Treaty concluded at Washington on the 15th of June, 1846.

In witness whereof the undersigned have signed this Protocol and have hereunto affixed their seals.

Done in duplicate at Washington, this tenth day of March in the year 1873.

[SEAL.]

HAMILTON FISH.

[SEAL.]

EDWD. THORNTON.

[SEAL.]

JAMES C. PREVOST.

DEFINITION OF THE BOUNDARY-LINE.

The chart upon which the Boundary Line between the British and United States Possessions is laid down is entitled "North America, West Coast, Strait of Juan de Fuca, and the channels between the continent and Vancouver Id., showing the Boundary line between British and American Possessions, from the Admiralty surveys by Captains H. Kellett, R. N., 1847, and G. H. Richards, R. N., 1858-1862."

The boundary line thus laid down on the chart is a black line shaded red on the side of the British possessions and blue on the side of the possessions of the United States.

The Boundary Line thus defined commences at the point on the 49th parallel of North Latitude on the west side of Point Robarts, which is marked by a stone monument, and the line is continued along the said parallel to the middle of the channel which separates the Continent from Vancouver Island; that is to say, to a point in Longitude $123^{\circ} 19' 15''$ W., as shown in the said chart.

It then proceeds in a direction about S. 50° E. (true) for about fifteen geographical miles, when it curves to the southward, passing equidistant between the west point of Patos Island and the east point of Saturna Island until the point midway on a line drawn between Turnpoint on Stewart Island and Fairfax point on Moresby Island bears S. 68° W. (true), distant ten miles, then on a course south 68° W. (true), ten miles to the said point midway between Turnpoint on Stewart Island and

Fairfax Point on Moresby Island, thence on a course about south $12^{\circ} 30'$ east (true) for about eight and three-quarter miles to a point due east one mile from the northernmost Kelp Reef, which reef on the said chart is laid down as in Latitude $48^{\circ} 33'$ north and in longitude $123^{\circ} 15'$ west, then its direction continues about S. $20^{\circ} 15'$ east (true) six and one-eighth miles to a point midway between Sea Bird Point on Discovery Island and Pile Point on San Juan Island, thence in a straight line S. 45° E. (true) until it touches the North end of the middle Bank in between 13 and 18 fathoms of water; from this point the line takes a general S. $28^{\circ} 30'$ W. direction (true) for about ten miles, when it reaches the center of the fairway of the Strait of Juan de Fuca, which by the chart is in the Latitude of $48^{\circ} 17'$ north and Longitude $123^{\circ} 14' 40''$ W.

Thence the line runs in a direction S. 73° W. (true) for twelve miles to a point on a straight line drawn from the lighthouse on Race Island to Angelos Point midway between the same.

Thence the line runs through the center of the Strait of Juan de Fuca first in a direction N. $80^{\circ} 30'$ W. about $5\frac{3}{4}$ miles to a point equidistant on a straight line between Beechey Head on Vancouver Island and Tongue Point on the shore of Washington Territory; second in a direction N. 76° W., about $13\frac{1}{2}$ miles to a point equidistant in a straight line between Sherringham Point on Vancouver Island and Pillar Point on the shore of Washington Territory; third, in a direction N. 68° W., about $30\frac{3}{4}$ miles to the Pacific Ocean at a point equidistant between Bonilla Point on Vancouver Island and Tatooch Island lighthouse on the American shore—the line between the points being nearly due North and South (true).

The courses and distances as given in the foregoing description are not assumed to be perfectly accurate, but are as nearly so as is supposed to be necessary to a practical definition of the line laid down on the chart and intended to be the Boundary line.

HAMILTON FISH.
EDWD. THORNTON.
JAMES C. PREVOST.

APPENDIX IV.

GEOGRAPHIC POSITIONS AND DESCRIPTIONS OF THE UNITED STATES COAST AND GEODETIC SURVEY TRIANGULATION STATIONS USED IN DETERMINING THE GEOGRAPHIC POSITIONS OF THE REFER- ENCE MARKS.

GEOGRAPHIC POSITIONS OF TRIANGULATION STATIONS.

North American Datum.

Name of station.	Latitude and longitude.	Azimuth.	Back azi- muth.	To station.	Logarithm of distance. (Meters.)
Rock	48 54 02.21 123 20 00.57				
Galiano S. E.	48 54 18.36 123 20 39.66	302 04 55.9	122 05 25.4	Rock	2.972926
Galiano N. W.	49 00 50.29 123 34 21.17	305 39 56.5 305 50 11.6	125 50 45.6 126 00 31.2	Rock Galiano S. E.	4.333928 4.314635
Dry	48 43 03.74 123 02 22.27				
Patos	48 47 06.77 122 58 12.40	31 11 17.7	214 11 09.8	Dry	3.957991
Turn Point Light.	48 41 21.27 123 14 11.37				
Tiptop	48 40 23.72 123 12 38.46				
Tom	48 39 18.43 123 16 29.52	256 59 31.1 224 33 58.5	77 02 24.6 44 35 42.3	Tiptop Turn Point Light.	3.685898 3.604943
Gordon Head	48 29 35.88 123 18 12.68				
Maple	48 35 20.40 123 12 02.95	35 30 49.8	215 26 12.8	Gordon Head	4.116198
Bellevue	48 31 48.26 123 09 43.01	68 42 07.5 156 21 58.6	248 35 45.7 336 20 13.7	Gordon Head. Maple.	4.050426 3.854520
Pile Point	48 28 58.51 123 05 36.95				
Discovery	48 25 33.33 123 13 33.51				
Dungeness	48 10 56.64 123 06 44.30	162 44 11.8	342 39 36.3	Discovery	4.452735
Iceberg	48 25 13.21 122 53 01.76				
Albert Head	48 23 16.67 123 28 38.81				

GEOGRAPHIC POSITIONS OF TRIANGULATION STATIONS—Continued.

Name of station	Latitude and longitude.	Azimuth	Back azimuth.	To station	Logarithm of distance (Meters.)
	° ' "	° ' "	° ' "		
Tolmie	48 27 25.23 123 19 28.98	55 52 26.1	235 45 34.8	Albert Head	4.435621
Striped Peak	48 09 36.65 123 41 07.69				
Beechy Head	48 19 47.72 123 39 22.22	6 35 16.3	186 33 57.6	Striped Peak.....	4.278745
Cliff.....	48 10 00.68 123 42 18.71				
Sheringham	48 22 40.57 123 55 19.18				
Pillar Point.....	48 13 02.16 124 06 06.20	216 40 17.2 249 05 23.2 281 26 06.8	36 48 20.3 69 25 30.3 101 44 43.7	Sheringham. Beechy Head Striped Peak.....	4.348181 4.548598 4.499613
Bonilla.....	48 35 39.98 124 42 54.76				
Tatoosh.....	48 23 31.28 124 44 03.34	183 34 19.1	3 35 40.5	Bonilla.....	4.353197

DESCRIPTIONS OF TRIANGULATION STATIONS.

ROCK.

(*Cowichan Dist., B. C., J. S. L. 1859.*)

On Rocky Island, a small island in the middle of the false entrance (western) to Active Passage. The island is composed entirely of sandstone, except near the middle and highest part, where there is a few inches of soil with some small stunted bushes. The station is about 13 feet above high-water mark on a small flat near the eastern extremity of the island and somewhat nearer the western than the southern face.

The station is marked by a $\frac{1}{2}$ -inch drill hole in solid rock, around which is cut an equilateral triangle with sides 1.2 feet in length. On the sloping face of the rock, in line to Point Roberts, are cut the letters "U. S. C. S.," the end letter being 9 inches long and the line to triangulation station "West Roberts" passes over this letter. Triangulation station "Belle Chain" is seen through a cut across the northeast point of Mayne Island. On this line and 26 feet from the station mark is a $\frac{1}{2}$ -inch drill hole in solid rock.

GALIANO S. E.

(*Cowichan Dist., B. C., J. S. L. 1859, 1909.*)

On the point of Galiano Island west of the false entrance to Active Passage. The point is 15 feet high and 70 feet wide, and was thickly covered with a growth of small pines, all of which were cut except five trees. These five trees, three of which are dead, stand nearly in line and are parallel to the shore. Later one of these trees was cut, and the line to Forwood triangulation station passes over the stump.

The station is midway of the point in a north and south direction and about 15 paces from the eastern extremity. The soil on the point varies from 2 inches to 2 feet in depth, beneath which is a bedrock of sandstone.

The station is marked by a $\frac{1}{2}$ -inch drill hole $1\frac{1}{4}$ inches deep in a flat stone $1\frac{1}{2}$ feet long, 1 foot wide, and 6 inches deep; buried 1 foot below the surface of the ground. The reference marks are: a copper nail in blaze on pine tree 61.7 feet distant from station mark; and a copper nail in top of stump nearly in line to Point Roberts, 35.8 feet distant from station mark. In 1909 the station was recovered, but the stump 35.8 feet from the station could not be found.

GALIANO N. W.

(*Cowichan Dist., B. C., J. S. L. 1859, 1909.*)

On the small island 20 feet high off the west end of Galiano Island and forming the east point of the entrance to Porlier Pass. A narrow sand spit which connects this island with the mainland is overflowed at high tide. The station is on the eastern end of the bare, rocky ridge 85 paces from the west end of the island.

The station is marked by a $\frac{1}{2}$ -inch drill hole 1 inch deep in a bedrock of sandstone. The reference marks are: a copper nail in blaze on large pine tree 76.6 feet distant from the mark and in line to a large marked tree standing on the east point of the passage into the boat harbor between the small island and the mainland; and a copper nail in blaze on the westerly of two pine trees growing on the bluff on the south face of the island and in line to the southeast part of the island forming the western side of Porlier Pass, 87.8 feet distant from the station mark.

DRY.

(*San Juan Co., Wash., J. J. G. 1894, 1909.*)

On the northwest point of Waldron Island, the first point north from Sandy Point, which it sees. Just south of the first point are several buildings used for curing and drying fish. The point is rocky, flat on top, about 20 feet across and 15 feet above the high-water mark. It has several inches of soil and is covered with grass.

The station is marked by a funnel-shaped hole, 2 inches deep in outcropping rock, which is very friable, located $2\frac{1}{2}$ paces south of edge of cliff, $3\frac{1}{2}$ paces north of edge of cliff, and 4 paces

east of edge of grass. A fir tree at the middle of the base of the point is marked by blaze and wire nail, 7 paces distant from station mark, and from this tree the station is nearly in line to highest part of Saturna Island. In 1909 the fir tree was reblazed and also another tree was blazed. The following angles and distances were measured from the station: East Point Light, $0^{\circ} 00' 00''$; nail in blazed tree No. 1, $129^{\circ} 32' 00''$, 22 feet 9 inches distant; nail in blazed tree No. 2, $158^{\circ} 49' 20''$, 21 feet distant.

PATOS.

(*San Juan Co., Wash., G. D. 1853, 1909.*)

On the southwest part of the smaller of the Patos Islands at the north entrance to Haro Strait, marked on Wilke's chart as Gowd Island.

The station is marked by a drill hole in rock, referenced by three other drill holes each 6 feet distant, the first in the direction of Sucia West, the second in the direction of Point Doughty, and the third in the direction of East Point. Under the hole made in the direction of Sucia West, the letters "U. S. C. S." are chiseled in the rock.

TURN POINT LIGHT.

(*San Juan Co., Wash., J. J. G. 1894.*)

On Turn Point, northwesterly end of Stuart Island, Haro Strait.

The station mark is the pinnacle or culmination of the roof of the lantern which sets on top of a post, painted white. To the southeast, near the lantern, stand a one-story fog signal house and a $1\frac{1}{2}$ -story dwelling, both painted white with lead colored trimmings and brown roofs.

TIPTOP.

(*San Juan Co., Wash., J. J. G. 1894.*)

On the highest part of Stuart Island and 8 paces east of the highest knob, on which stands a cairn, elevation 650 feet. The station is 2 feet lower than the highest knob.

The station is marked by a rough hole, 2 inches deep, in brittle conglomerate rock. Reference marks are: a wire nail in blaze on a fir tree to the north, from which the limbs have been trimmed, 14 paces distant; and a wire nail in blaze on a fir tree to the eastward 13 paces distant from the station mark.

TOM.

(*Esquimalt Dist., B. C., G. D. 1853, 1909.*)

On a rocky point about 15 feet above the water, on Tom Point or Tom Island, a small island off the east end of Gooch Island, and on the northeast projection of the point. This island is southwest from the west end of Stuart Island and $2\frac{1}{4}$ miles distant.

Station is marked by a drill hole in a depression of the rock surface. The reference marks are three drill holes in rock, each 6 feet distant; to northeast letters "C. S." and arrow cut in rock pointing in direction of the station; stump of tree bearing due north and blazed tree bearing N. 51° W., 94.5 feet distant from the mark.

GORDON HEAD.

(*Esquimalt Dist., B. C., G. D. 1854, 1909.*)

On the point on Vancouver Island at the southeastern part of Cordova Bay. The station is on the roundest point of Gordon Head about 40 feet above water, and about 150 yards to the south of it is an indentation and beach.

The station is marked by a drill hole $1\frac{1}{2}$ inches deep in solid rock. The reference marks are two blazed trees about 3 feet apart bearing N. 80° W., magnetic, the larger being 59 feet 2 inches distant from the mark.

MAPLE.

(*San Juan Co., Wash., J. J. G., 1894, 1909.*)

On Henry Island about 120 feet above high-water mark. The station is on bare rock 200 feet south of a clump of maples near the steep portion of the bluff, in line to the west end of Stuart Island. Station can not be seen from station on Stuart Island.

The station is marked by a $\frac{5}{8}$ -inch drill hole 2 inches deep in solid rock. Reference mark is a wire nail in blaze on fir tree growing nearest bluff, 43 feet 1 inch distant from the station mark.

BELLEVUE.

(*San Juan Co., Wash., G. D. 1854, 1909.*)

On San Juan Island, on the most southerly bold, bare-topped rock point which will see Henry triangulation station. The station is about 150 feet above high-water mark on a flat 6 yards from the edge of the bluff north of landing. There is a large pine tree just east of a line toward Henry triangulation station.

The station is marked by a drill hole $2\frac{1}{2}$ inches deep in solid rock. Reference mark is a blazed tree S. 59° E., magnetic, 67 feet 5 inches distant from the station mark.

PILE POINT.

(*San Juan Co., Wash., J. J. G., 1894, 1909.*)

On Pile Point, San Juan Island, to the southeast of which is False Bay, and to the north a bight. No trees are within $\frac{1}{4}$ mile, a large ranch house is $\frac{1}{2}$ mile to the eastward. The station is 65 feet back from the water, 25 feet above the high-water mark, and about 300 feet north-west of the southern extremity of the point.

The station is marked by a $\frac{3}{8}$ -inch drill hole 2 inches deep in solid rock.

DISCOVERY.

(*Esquimalt Dist., B. C., G. D. 1854, 1909.*)

On Discovery Island, off the southeast part of Vancouver Island and forming the south-western boundary of entrance to Haro Strait; on the top of the high, rocky part of the island, opposite to the highest part of Bellevue Island, the eastern face of the rock, being perpendicular for nearly 50 feet from the top. It is about 200 paces W. of N. from lighthouse on Discovery Island.

The station is marked by end of copper wire in center of a concrete pier 11 by 11 inches and about 4 feet high over a drill hole in a depression of the rock surface. The copper wire extends through the pier vertically to the drill hole. Reference mark is a nail in a manzanita tree, bearing N. 27° W., magnetic, 100 feet 3 inches distant from the mark.

DUNGENESS.

(*Clallam Co., Wash., G. D. 1856, 1892.*)

Station is near Dungeness Point.

The station is marked by end of copper wire in the center of a concrete pier, about 7 feet high, built over a bottle buried 2 feet below the surface of the ground. The copper wire extends vertically through the pier to the bottle in the ground. Reference mark is a post 16 inches in diameter and 6 feet high, 12 feet distant from the mark on line to New Dungeness Lighthouse.

ICEBERG.

(*San Juan Co., Wash., G. D. 1854, 1909.*)

On Lopez Island about $\frac{3}{4}$ mile from the southwest end, and on the high rocky hill or bluff about 200 feet above high water. It is on the westernmost point of the island that will see S. E. Island, Deception Island, and the southwest part of Bellevue Island. About 30 feet east of the station are some deep furrows traced by the action of icebergs and boulders, the principal one being 50 feet long and 8 or 9 feet deep. Their general direction is north and south. About 400 yards south of the station is a rocky islet. Station is about 30 feet west of the highest point of the hill.

Station is marked by drill hole $2\frac{1}{2}$ inches deep in solid rock.

ALBERT HEAD.

(*Esquimalt Dist., B. C., J. S. L. 1869, 1909.*)

On Albert Head, the rocky headland which forms the southern point of Royal Bay or Roads, about 200 feet from the extreme northeast point, and 80 feet above high water mark. North of the station about 130 feet is a small boat landing. From the head of a crevice in the rocks a narrow belt of fir trees extends back to the heavy timber, being the only trees near the water on the point.

The station is marked by a $\frac{3}{8}$ -inch drill hole 2 inches deep in solid rock. In 1909 the drill hole was found and a 12-gauge brass butt of a paper cartridge shell was forced into it, and a reference mark was established as follows: Copper nail with brass washer marked "C. S. C." in root of fir tree 86.8 feet south from the mark. The angle from Gonzales signal to reference mark is $123^{\circ} 59'$.

TOLMIE.

(Esquimalt Dist., B. C., J. J. G. 1892, 1909.)

On the southernmost of several rocks of about the same altitude on the summit of Mount Tolmie, which is a prominent hill, 345 feet high, and about $2\frac{1}{2}$ miles northeast from the town of Victoria. There is a good-sized scrub oak 17 feet northwest of the station with some smaller oaks nearby, the only trees on the hill.

The station is marked by a $\frac{3}{4}$ -inch drill hole 2 inches deep in the center of the rock, with a triangle cut around it.

STRIPED PEAK.

(Clallam Co., Wash., J. J. G. 1892, 1909.)

On outcrop of rock about 25 feet from the edge of a cliff, 1 mile a little south of east from Tongue Point. The cliff is about 450 feet high and the station is about 330 feet from the western end of the cliff. A good way to reach the station is by landing near the mouth of creek at the northeast end of a bay just west of Tongue Point and passing through the cleared ground surrounding a small house, the only one in the vicinity.

The station mark was originally a pier 12 by 12 by 50 inches high, built over a hole in rock, plugged with wood. When the station was visited in 1909 the concrete pier had disappeared, but the outline of the base of the pier was plainly visible on the rock. The drill hole was in good condition and was replugged with wood.

BEECHY HEAD.

(Esquimalt Dist., B. C., J. J. G. 1892, 1909.)

On Beechy Head, on the south side of Vancouver Island. The station is on bare rock on the highest point of the highest knob south of Mabel Peak, which is about $\frac{1}{4}$ mile distant.

The station is marked by a $\frac{5}{8}$ -inch drill hole 2 inches deep in solid rock. Over this was built a concrete pier 50 inches high. In 1909 the concrete pier was found broken off and lying by the mark. It was reset and cemented to the rock. The present visible station mark is a drill hole in the top of the pier due east $\frac{1}{4}$ inch distant from end of copper wire in center of the pier.

CLIFF.

(Clallam Co., Wash., J. J. G. 1892, 1909.)

On the point at the east entrance to Port Crescent, just around the point to eastward. It is the first large fir tree, 2 feet through. Tree was marked by blaze and wire nail. A narrow tongue makes out at this point and the tree stands on the east side of the base of tongue, and just at the edge of the cliff, which is 25 feet high.

SHERINGHAM.

(Esquimalt Dist., B. C., J. J. G. 1892, 1909.)

On Sheringham Point, on the south side of Vancouver Island. The station is about 500 feet west of the extreme end of the point and 50 feet above the high-water mark.

The station is marked by a $\frac{5}{8}$ -inch drill hole 2 inches deep in a large stone 18 inches below the surface of the ground. The reference marks are: a copper tack in a stump 10 inches in diameter, 24 feet southwest of the mark; and a copper tack in a blaze on a pine tree 6 inches in diameter, 28.6 feet northeast of the mark. In 1893 a concrete pier was built over this station.

PILLAR POINT.

(Clallam Co., Wash., F. M., 1909.)

On a rock 20 feet above high-water mark, 25 feet square at the top, and about 60 feet west of Pillar Point. The brush was cleared off the top and a hole dug 3 feet to solid rock.

The station is marked by a drill hole 2 inches deep in the solid rock at the bottom of the hole.

BONILLA.

(Cowichan Dist., B. C., J. J. G. 1893.)

On Bonilla Point, which is very irregular and fringed by extensive reefs. There are two points here about 1,300 feet apart, with a small stream of water between them, the water going over a cliff close to the beach, forming a small cascade. On the westerly of these two points, about 200 feet offshore, a tall rock covered with grass rises from a reef, which is bare at $\frac{2}{3}$ tide. The station is on the easterly of the two points and the only place from which both Carmanah Light and triangulation station "Vancouver" can be seen. There is a fair landing behind the reef in front of the station, with the tide more than half flood. The distance from

the station to high-water mark in the direction of the tall rock is 15 paces; to the high-water mark in a southeast direction 18 paces; to the extreme south point is 23 paces; and to the edge of the grass 13 paces.

The station is marked by a $\frac{3}{8}$ -inch drill hole 2 inches deep in a large stone buried 16 inches below the surface, over which stands a concrete pier 50 inches high.

TATOOSH.

(*Clallam Co., Wash., J. F. P., 1886, 1893.*)

On a small knoll 375 feet S. $87^{\circ} 59' 41''$ E. (true) from the center of the ball or ventilator on top of lantern of Tatoosh (Cape Flattery) lighthouse.

The station is marked by center of a brick pier over the subsurface mark, which is a $\frac{3}{4}$ -inch copper bolt 6 inches long projecting $\frac{1}{8}$ inch above the surface of the rock, which is 20 inches below the surface of the ground.

581 21 7"

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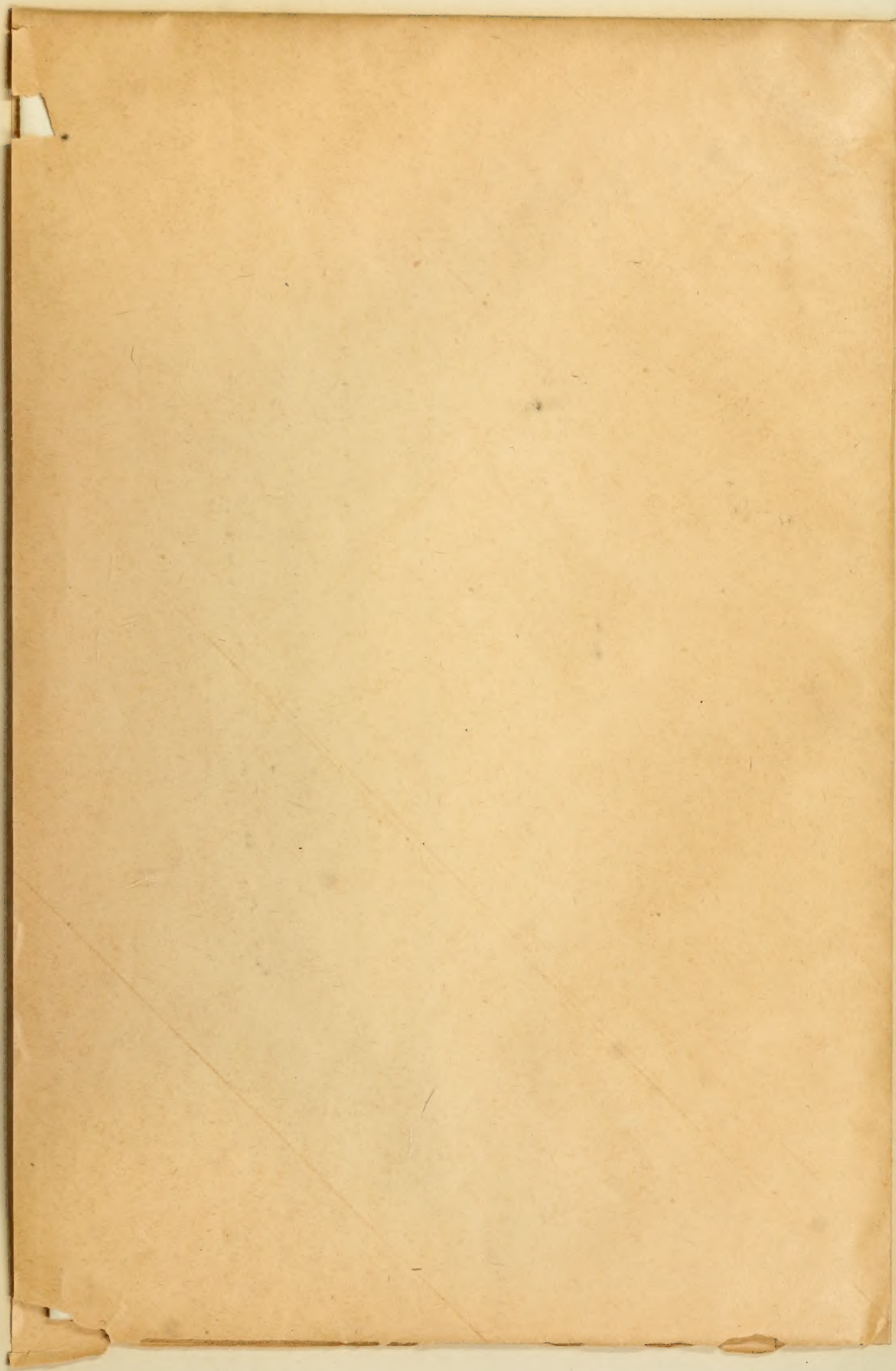
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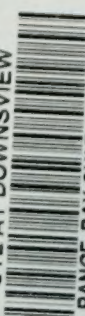
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